225

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 12 IN SET 195

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In later production of Wells-Gardner, Models 317GS34C-218, -220-278 the following changes were made.

NEW PICTURE TUBE

In later production the picture tube, V23, was changed from a 17TP4 to a 17HP4.

AGC THRESHOLD CONTROL ADDED

This circuit consists of a 2.5Meg potentiometer (part #40X364) and a 2.7Meg resistor, connected in series, and added between the AGC lead to the tuner and the 120V line. This control and resistor combination take the place of the 3.9Meg resistor (R33) which is omitted when the control is used.
To adjust the control, tune in the strongest available signal and turn the control clockwise until overloading occurs. Then turn the control a few degrees counter clockwise until overloading disapears.

ON/OFF SWITCH CHANGED

The on/off switch was changed to a DPST switch, part #78X13 (includes volume and contrast controls). The additional poles of this switch is connected between the 120 volt source and the brightness control. When the receiver is turned off the brightness control is disconnected from the 120 volt source. When this change is made, C66 is connected directly to 240 volts instead of the pin 6 of V23. A partial schematic showing these changes is given below.

BLEEDER RESISTOR FOR INPUT FILTER CAPACITOR ADDED

A 100KΩ, 2 watt resistor was added across the fuse, M1. This change was made to eliminate the shock hazard in the event the fuse failed by allowing a path for the input filter capacitor, C1A, to discharge.

NEW POWER TRANSFORMER

In some chassis a different power transformer (part #53C332) may be used. This transformer is identical to the one originally used (part #53X325), except the rectifier tube, V22, is mounted in the top cover of the transformer.

NEW DAMPER TUBE

Interferance into nearby broadcast receivers, caused by radiation from the horizontal output circuit into the AC line, has been reduced by using a 6AX4GT tube instead of a 6W4GT damper tube.

When the 6AX4GT tube is used the lead from terminal 3 of T3 to pin 7 of the damper tube is removed and pin 7 is grounded. A partial schematic of this circuit is given on the reverse side.

SERVICE HINT

In some new television areas, particularly where final transmitter adjustments have not been made, horizontal jitters may be noticed. This is usually caused by phase shift in the timing circuits of the transmitter.

This condition can be reduced by removing the long time constant filter network (R93-C74) from pin 4 of V18.

If this network is removed it will increase the tendency to bend at the top of the picture, however, in most cases it will not be severe enough to be objectionable.

WELLS-GARDNER MODELS 317GS34C-218, 317GS34C-220, 317GS34C-278

PRODUCTION CHANGES
BULLETIN 84

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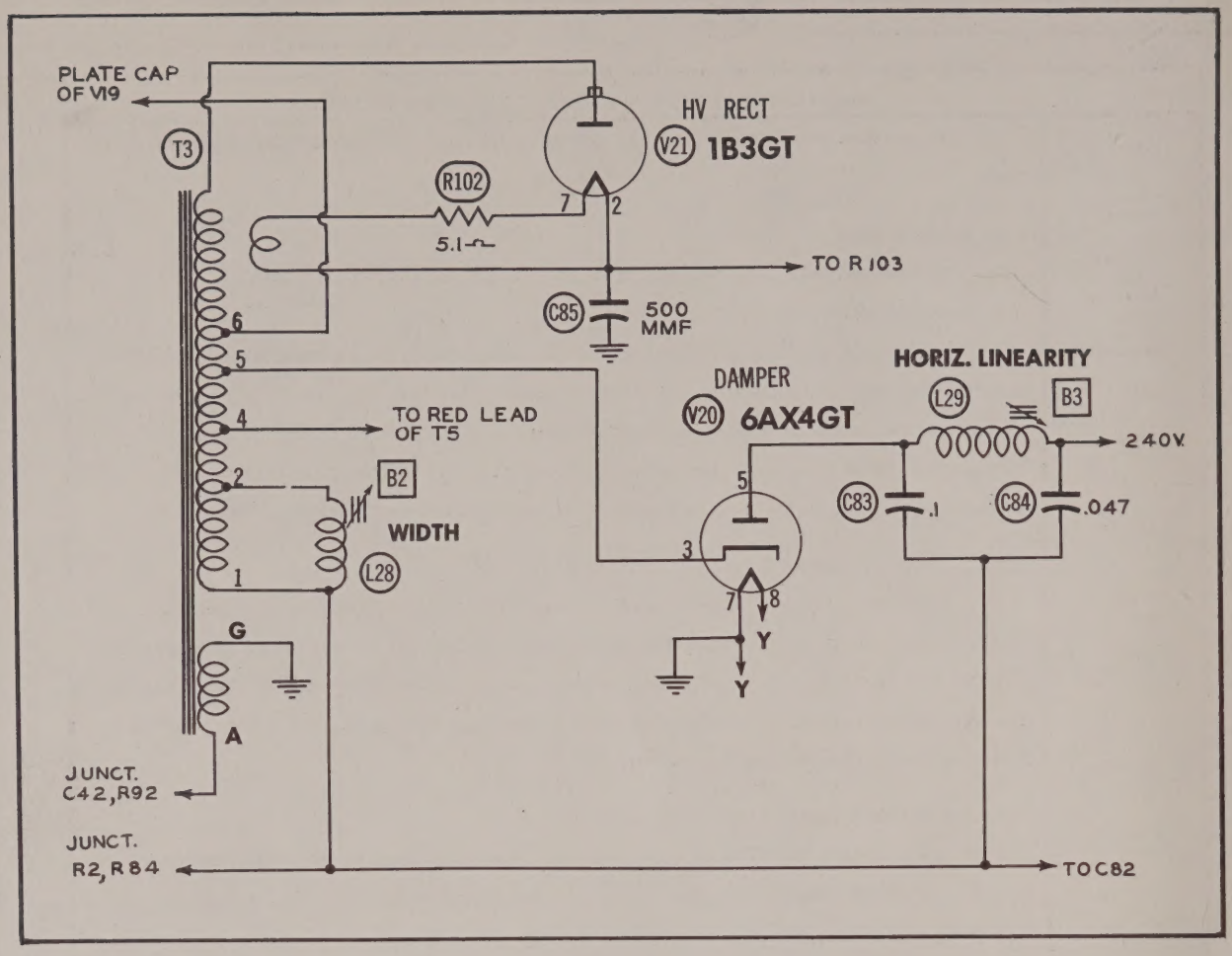
PLATE CAP OF V19
T3
HV RECT
V21 1B3GT
R102
5.1
7
2
TO R 103
C85 500 MMF
6
5
DAMPER
V20 6AX4GT
HORIZ. LINEARITY
L29
B3
240V.
4
TO RED LEAD OF T5
2
B2
WIDTH
L28
1
5
C83 .1
C84 .047
3
7
8
Y
Y
G
A
JUNCT. C42,R92
JUNCT. R2,R84
TO C82

PROPERTY OF
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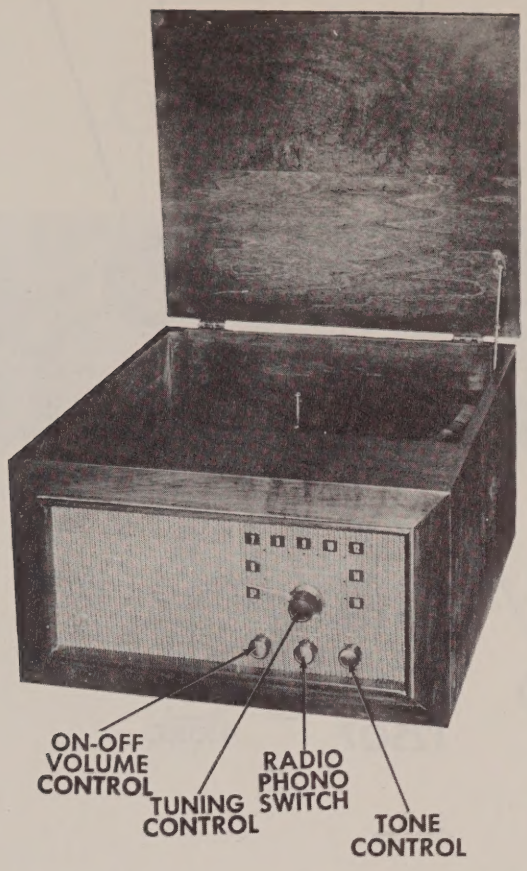
3924 MEADE ST.
DENVER, COLORADO

AIRLINE MODELS
25GSG-2016A, 35GSG-2016B



AIRLINE MODELS
25GSG-2016A, 35GSG-2016B

TRADE NAME	Airline Models 25GSG-2016A, 35GSG-2016B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated Radio-Phono Combination Receiver with 3 Speed Automatic Record Changer
TUBES (Five)	Types 12SA7 Conv., 12SK7 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (grid) of 12SA7 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	"	A6	"
4.	Check low frequency range at 540KC. If necessary bend slotted plates on antenna section of tuning gang. Repeat Sets 2 and 3.						

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE V-M MODEL 950 PHOTOFACT SET #107 - FOLER 13, OR RECORD CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 25GSG-2016A

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		AIRLINE PART No.	STANDARD REPLACEMENT		
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7	12SK7	8N	
V3	Det.-AVC-AF Amp.	12SQ7	12SQ7	8Q	
V4	Audio Output	50L6GT	50L6GT	7S	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150	285-1272	PRS150/40-30-20		BBRQ443-15C				
B	20	150								
C	20	150		PRS25/20						
D	20	25								
C2	.1	200	263-1042	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C3	5000		222-5-24	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C4	50		223-5003	SI50	D6-500	TM5Q5	GP1K-500	UC-545	5GA-Q5	
C5	100		223-1014	SI100	D6-101	TM5T1	GP1K-100	UC-531	5GA-T1	
C6	100		223-1014	SI100	D6-101	TM5T1	GP1K-100	UC-531	5GA-T1	
C7	10000		222-1034	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C8	250		222-2714	SI250	D6-251		GP2K-251	UC-5325	5GA-T25	
C9	10000		222-1034	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C10	10000		222-1034	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C11	5000		222-5-24	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C12	.05	400	263-5034	489ZX-05		PJ4S5		PT415	4TM-S5	
C13	.1	200	263-1042	P288-1		PJ2P1		PT401	2TM-P1	
C14	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	126A50413-4	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	500KΩ	½	124A50413-7	Q13-133	AG-60-Z	B-60	U-48	Tone
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

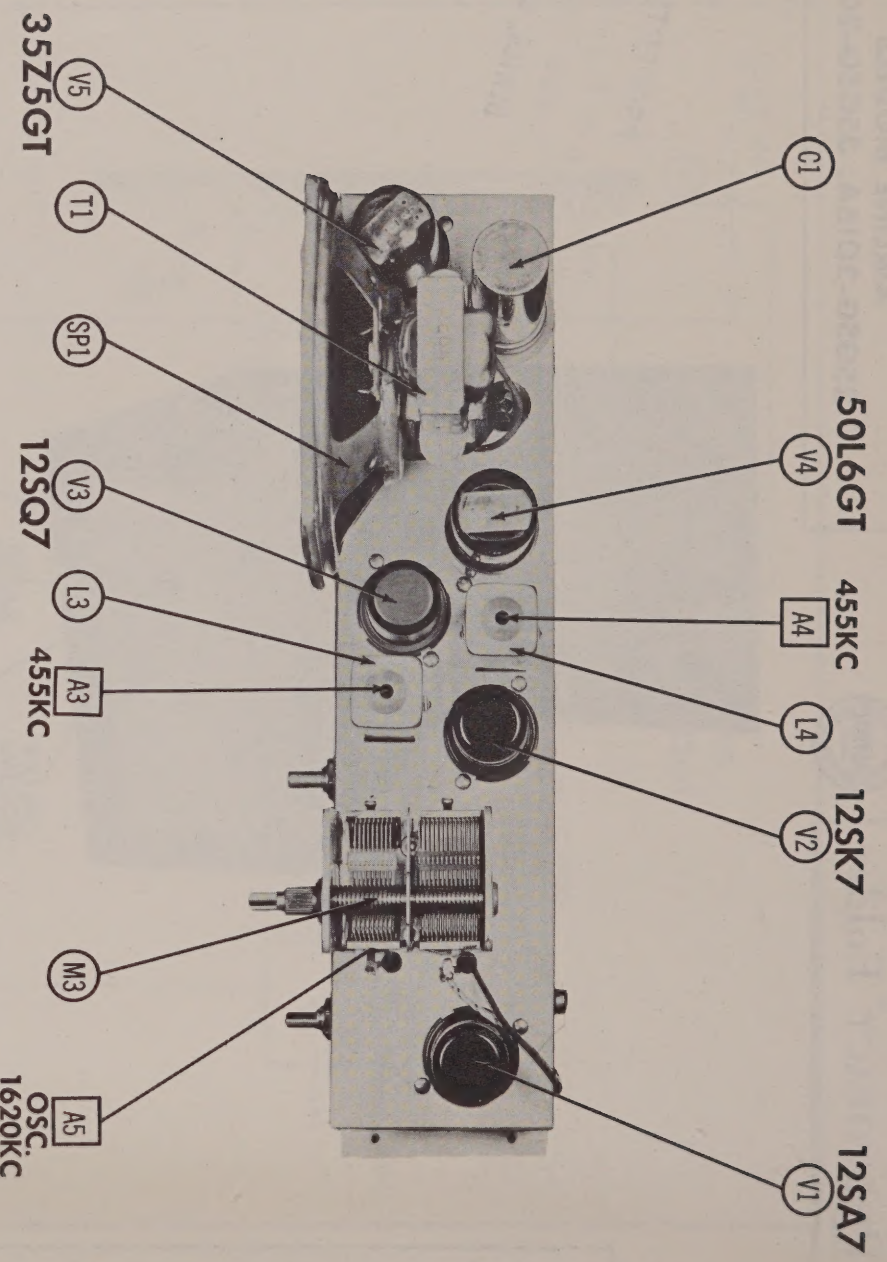
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	AIRLINE PART No.	IRC PART No.	
R3	22KΩ	½	111-22321	BTS-22K	
R4	510Ω	1	111-5121	BTA-510	
R5	2.2Meg	½	111-22521	BTS-2.2Meg	
R6	47KΩ	½	111-47321	BTS-47K	
R7	47Ω	½	111-47021	BTS-47	
R8	4.7Meg	½	111-47521	BTS-4.7Meg	
R9	1Meg	½	111-10521	BTS-1Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	AIRLINE PART No.	IRC PART No.	
R10	470KΩ	½	111-47421	BTS-470K	
R11	150Ω	½	111-15121	BTS-150	
R12	100KΩ	½	111-10421	BTS-100K	
R13	270Ω	1	111-27131	BTA-270	
R14	1000Ω	½	111-10221	BTS-1000	
R15	27Ω	½	111-27021	BTS-27	
R16	40Ω	½	122-40031	BTS-40	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.2KΩ	3.1Ω	210Ω	.5Ω	Part of Spkr.	A-3877	A-2928	RO-2	S-2X	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3.1Ω	345-14	ST-803 Mod. P525-V	52A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.4Ω		311C17				
L2	Osc. Coil	5Ω		311-14			71-Osc. †	Tapped @ .7Ω
L3	Input IF	16Ω	16Ω	322-4	16-6666 *	BC-368 *	1312-C1 *	
L4	Output IF	16Ω	16Ω	322-5	16-6667 *	BC-371 *	1312-C4 *	

† Drill mounting hole.
* Drill one new mounting hole.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	AIRLINE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	60H17	ACD-J	A-1 A-3	W22AB	A65MG A62A	96	0-1 or S-1 & 0-3 or S-3	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	AIRLINE PART No.	WALCO PART No.	JENSEN PART No.	
M2	* 61H2	W-30MGS or W-30MGA	JPS-30LP or JP-30LP	* Micro Groove Needle
	♦ 61H13	W-30S or W-30A	JP-30 or JPS-30	♦ Standard needle

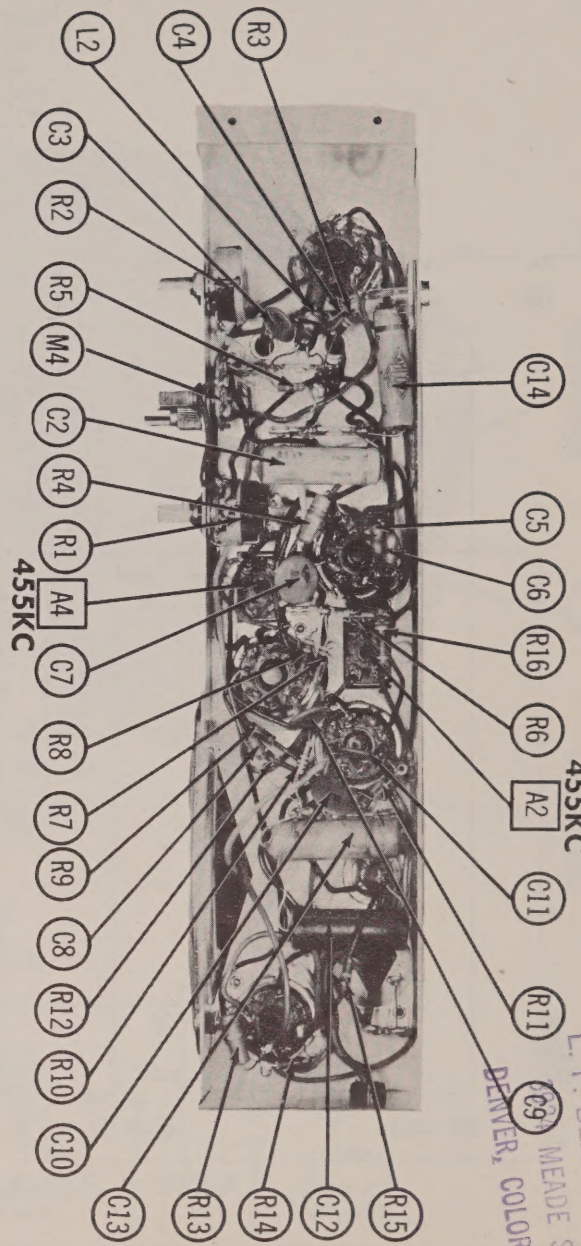
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Tuning Cap.	211-2	(33-442MMF, 38-200MMF)
M4	Switch	532-A-7	Radio-phono selector
	Knob	814-27	1" Dia. inlay - tuning
	Knob	814-28	3/4" dia. inlay - 3 used - Volume, tone, radio-phono

SET 225 FOLDER 2

AIRLINE MODEL 25GSG-2016A

CHASSIS—BOTTOM VIEW



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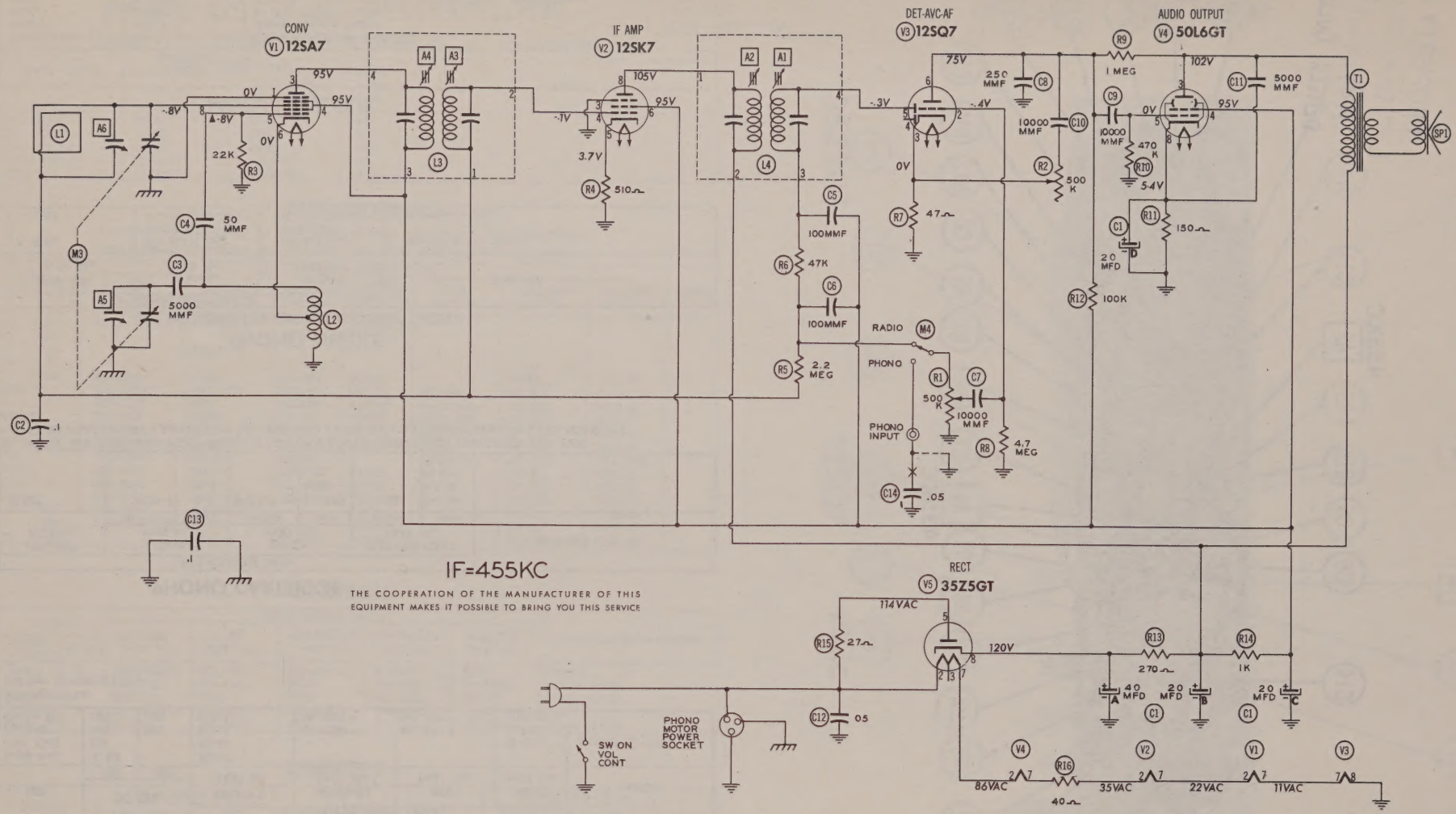
AIRLINE MODEL 25GSG-2016A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	500KΩ	25Ω	†1.3KΩ	†1.3KΩ	22KΩ	.6Ω	13Ω	2.7Meg
V 2	12SK7	500KΩ	37Ω	0Ω	2.7Meg	510Ω	†1.3KΩ	25Ω	†270Ω
V 3	12SQ7	500KΩ	4.7Meg	47Ω	INF	550KΩ	†100KΩ	13Ω	0Ω
V 4	50L6	INF	132Ω	†480Ω	†1.3KΩ	470KΩ	INF	77Ω	INF
V 5	35Z5	INF	172Ω	164Ω	†1.3KΩ	260Ω	†270Ω	132Ω	20KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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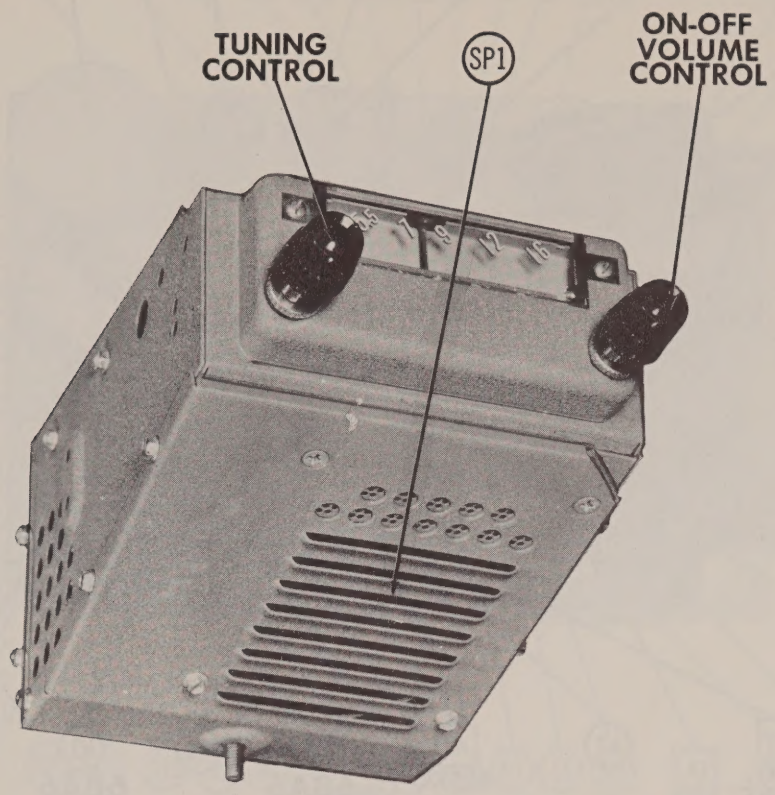
225-2

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ALLSTATE MODELS
6286-4 (Ch. 528.6286-4), 6287-4 (Ch. 528.6287-4)



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DENVER, COLORADO

ALLSTATE MODELS
6286-4 (Ch. 528.6286-4), 6287-4 (Ch. 528.6287-4)

TRADE NAME	Allstate Models 6286-4 (Ch. 528.6286-4), 6287-4 (Ch. 528.6287-4)
SUPPLIER	Sears Roebuck & Co., 629 S. Homan Ave., Chicago, Ill.
TYPE SET	Battery Operated Universal Automobile Superheterodyne Receiver
TUBES (Six)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 Det.-AVC-AF Amp., 6AQ5 Audio Output, 6X5GT Rectifier
POWER SUPPLY	6 Volts Storage Battery — RATING 4.2 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	535-1605KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	50MMF & 30MMF	High side thru 50MMF to antenna receptacle. Low side to chassis. Shunt 30MMF across antenna input.	1605KC	"	"	A5	"
3.	"	"	1400KC	Tune to 1400KC signal	"	A6, A7	"
4.	"	"	600KC	Tune to 600KC signal	"	A8	"
5.	"	"	600KC	"	"	A9	"
6.	Repeat steps 3, 4 and 5.						
7.	With radio installed in car and antenna fully extended tune to a quiet point between 1300 and 1400KC and adjust A7 for maximum hiss or noise.						

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA ALLSTATE PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det-AVC-AF-Amp.	6AV6	6AV6	7BT	
V5	Audio Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X5GT	6X5GT	6Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	ALLSTATE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■10	250	A18-303	AF3-101		CO21		FP375.8	TVL-3580	
B	▲10	250								
C	10	25								
C2	.05	200	A16-189	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C3	100		A15-196	S1100	D6-101		GP1K-101	UC-531	5GA-T1	
C4	10000		A15-211	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C5	12		A15-205							
C6A	220				D6-221		GP2K-221	UC-5322		
B	5000				D6-502		GP2-333-502	DC-525		
C	220		A17-104	PA-100	D6-221		GP2K-221	UC-5322	34C3	
D	5000				D6-502		GP2-333-502	DC-525		
C7	.02	200	A16-197	P288-02	DD-203	PTE4S2		PT412	2TM-S2	
C8	5000		A16-177	BPD-005	D6-502	TM5D5	811-005	DC-525	5HK-D5	
C9	.05	200	A16-189	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C10	10000		A15-211	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C11	.5	100	A16-215	VHC-36		MP2P5		RF480	HC-3	
C12	.5	100	A16-215	VHC-36		MP2P5		RF480	HC-3	
C13	.005	1600	A16-185	BCD-9		PTE16D5		PT1625	MB-D5	
C14	5000		A16-177	BPD-005	D6-502	TM5D5	811-005	DC-525	5HK-D5	
C15	5000		A16-177	BPD-005	D6-502	TM5D5	811-005	DC-525	5HK-D5	
C16	.05	200	A16-189	P288-05	DF-503	PTE4S5		PT415	2TM-S5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	ALLSTATE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	A24-192	Q13-133	AG-60-Z	AB-60	U-48	Volume - NOTE
B	Shaft		Not Req.	NQ	RS-3/16	AK-8	DS-37	Attach to R1A
C	Switch		Not Req.	76-1	SWB	KB-1	US-26	Attach to R1A

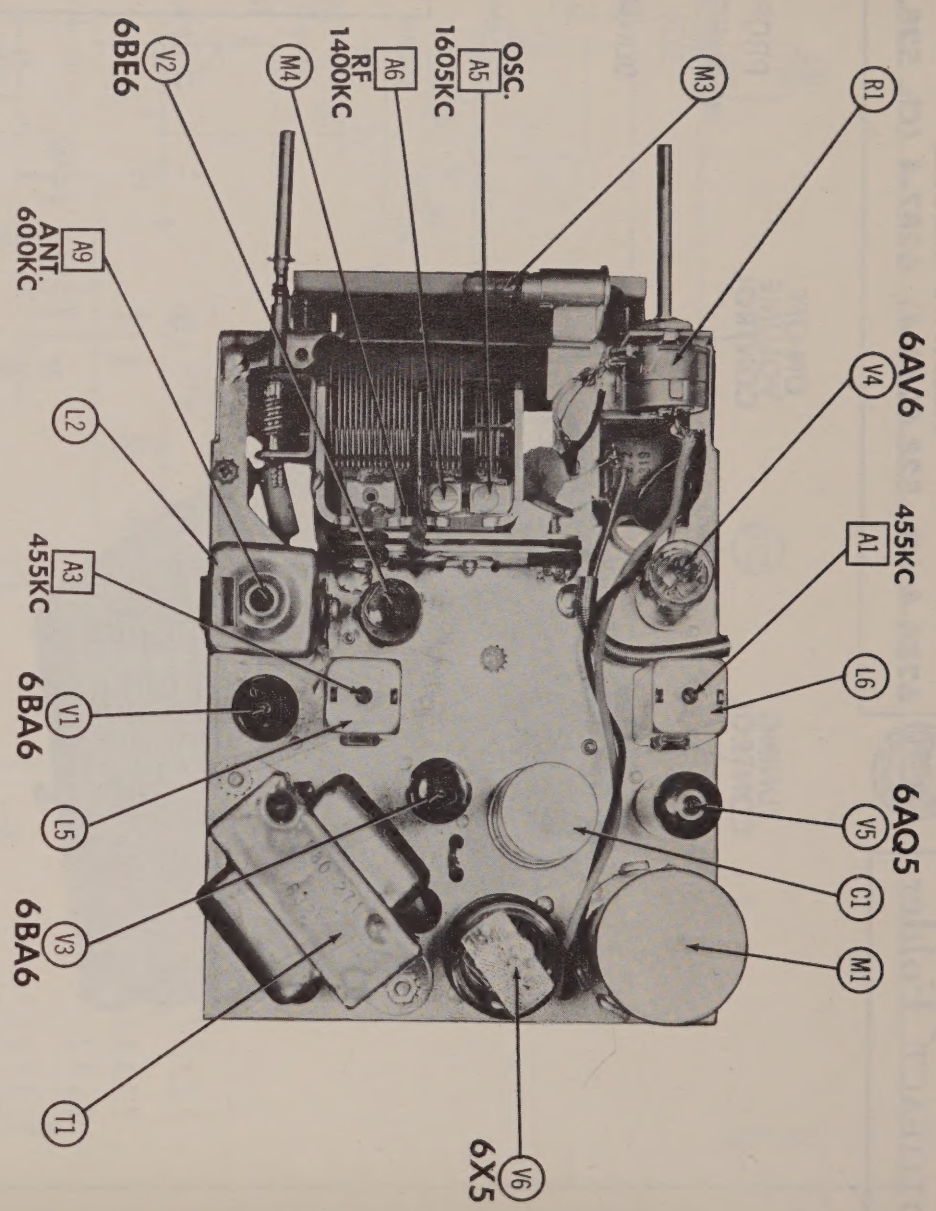
Note: Chassis No. 528. 6287-4 will use alternate control No. A24-193.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	ALLSTATE PART No.	IRC PART No.	NOTES
R2	150Ω	½	A60-767	BTS-150	
R3	330KΩ	½	A60-661	BTS-330	
R4	10KΩ	½	A60-760	BTS-10K	
R5	22KΩ	½	A60-744	BTS-22K	
R6	1Meg	½	A60-668	BTS-1Meg	
R7	120Ω	½	A60-867	BTS-120	
R8	15KΩ	1	A60-716	BTA-15K	
R9	2. 2Meg	½	A60-726	BTS-2. 2Meg	

ITEM No.	RATING OHMS	RATING WATT	ALLSTATE PART No.	IRC PART No.	NOTES
R10	10Meg	½	A60-728	BTS-10Meg	
R11	220KΩ	½	A60-667	BTS-220K	
R12	100KΩ	½	A60-727	BTS-100K	
R13	470KΩ	½	A60-731	BTS-470K	
R14	270Ω	1	A60-754	BTA-270	
R15	4700Ω	1	A60-765	BTA-4700	
R16	470Ω	1	A60-694	BTA-470	
R17	150Ω	½	A60-767	BTS-150	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	ALLSTATE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6.3VCT 2A	400VCT .055ADC			80-271		P-2970		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		ALLSTATE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	4.35KΩ	3Ω	350Ω	.75Ω	80-272	A-3877	A-2930	RO-9	S-5X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ALLSTATE PART No.	VIKING PART No.	QUAM PART No.	
SP1	4 x 6"	PM	3Ω	B79-390	46J6	46A07	

COILS (I.F.-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ALLSTATE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coupling	.7Ω		A10-527			4612	10.6Microhenries
L2	Ant. Coil	3Ω		B10-575				Tapped ③ 1.2Ω
L3	RF Coil	10Ω		B10-570				Tapped ② 6.5Ω
L4	Osc. Coil	13Ω		B10-569				Tapped ① 1.2Ω
L5	Input IF	16Ω	16Ω	A10-521	16-6758	BC-6758	12-C1	
L6	Output IF	10Ω	9Ω	A10-529	16-6758	BC-353	12-C2	
L7	Fil. Choke	0Ω		A33-229			5221	1.7Microhenries
L8	Vibrator Hash choke	0Ω		A33-235			5221	10.5Microhenries

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				ALLSTATE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6V	115∿	A34-105	5301	859	5301	

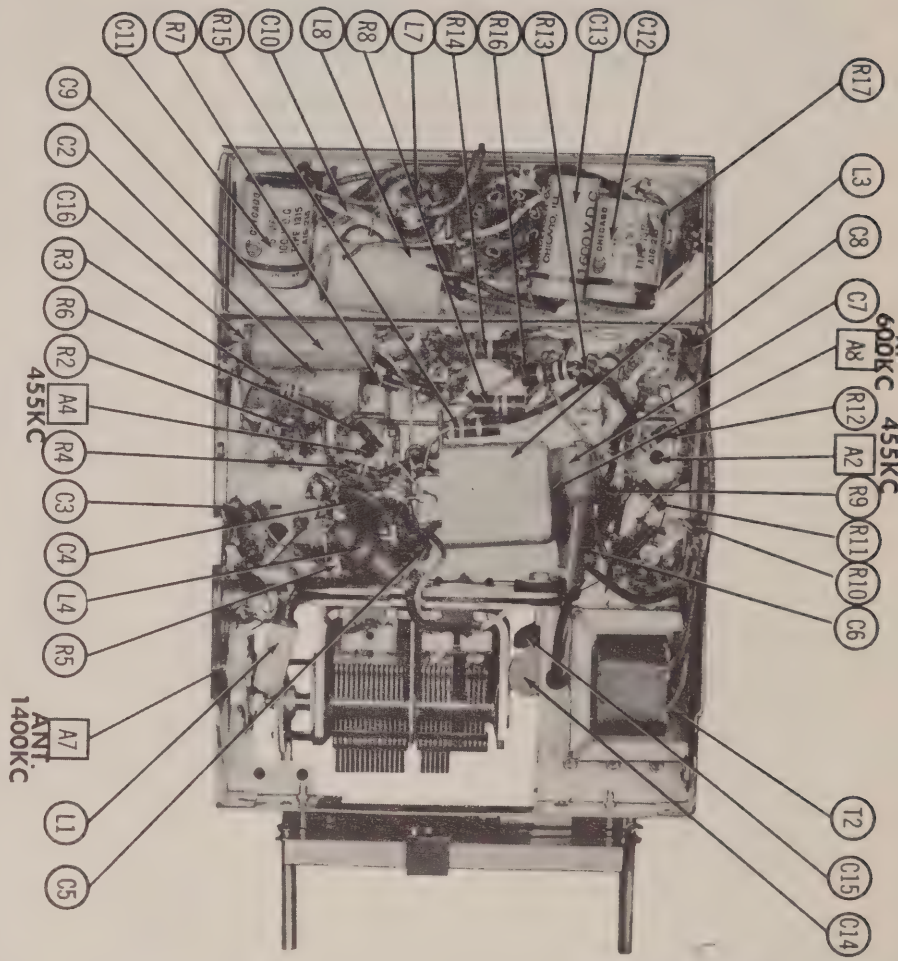
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ALLSTATE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	15A	A43-10	A81-13	311015. (3AG-15A)	155020	AGC15	HDJ

MISCELLANEOUS

ITEM No.	PART NAME	ALLSTATE PART No.	NOTES
M3	Dial Light	A89-7	#47
M4	Tuning Cap.	A19-229	(13-472MMF, 12-215MMF, 13-85MMF)
A7	Trimmer Cap.	A20-150	Antenna
	Knob	C52-326	Volume and tuning (2 used)
	Dial Scale	B67-559	Model 528.6286-4
	Dial Scale	B67-566	Model 528.6287-4

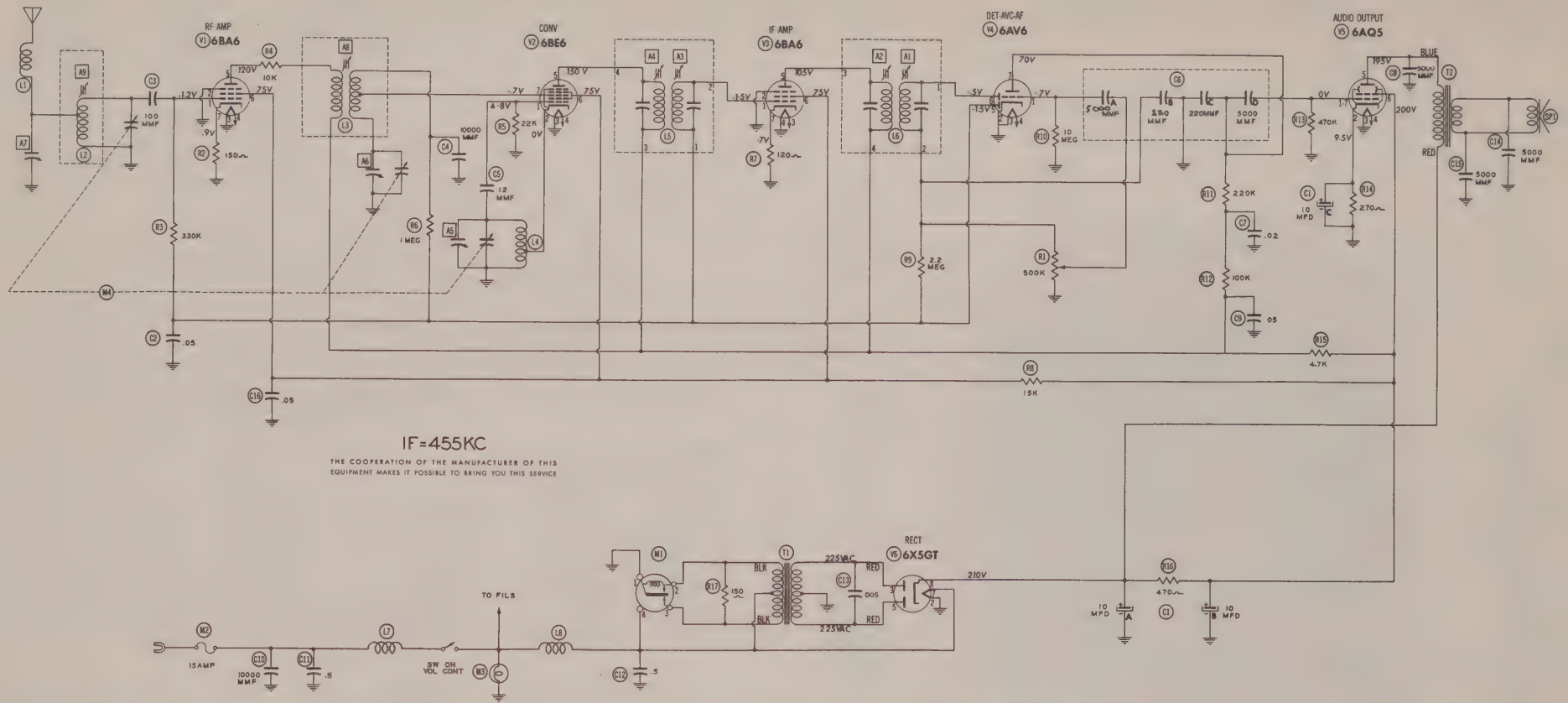
CHASSIS—BOTTOM VIEW



SET 225 FOLDER 3

ALLSTATE
MODEL 6286-4 (Ch. 528. 6286-4)

ALLSTATE
MODEL 6286-4 (Ch. 528. 6286-4)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	3Meg	0Ω	0Ω	.7Ω	†15KΩ	†15KΩ	150Ω	
V 2	6BE6	22KΩ	1.2Ω	0Ω	.7Ω	†5KΩ	†15KΩ	3.7Meg	
V 3	6BA6	2.7Meg	0Ω	.7Ω	0Ω	†5KΩ	†15KΩ	120Ω	
V 4	6AV6	10Meg	0Ω	0Ω	.7Ω	2.7Meg	.5Meg	†325KΩ	
V 5	6AQ5	470KΩ	270Ω	0Ω	.7Ω	†350Ω	†470Ω	470KΩ	
V 6	6X5GT	.7Ω	0Ω	490Ω	.7Ω	420Ω	.7Ω	.7Ω	220KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V6

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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225-3

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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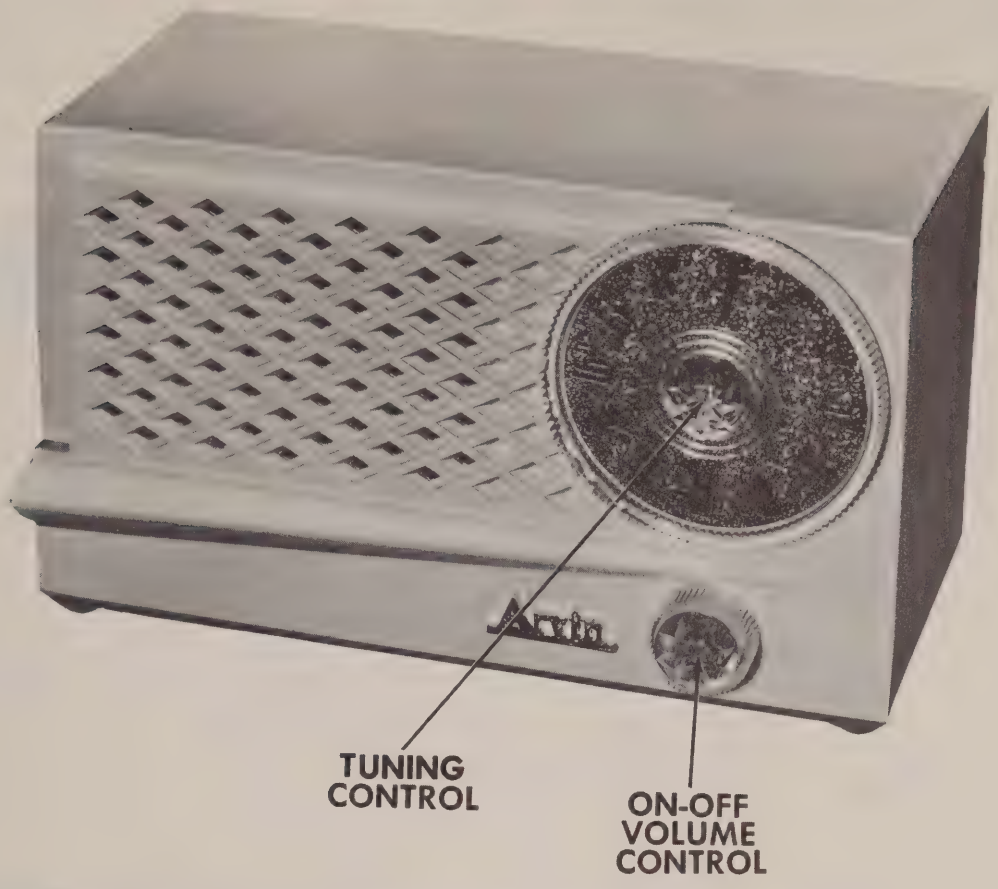
ARVIN
MODEL 741T (Ch. RE352)



ARVIN
MODEL 741T (Ch. RE352)

TRADE NAME	Arvin Model 741T (Ch. RE352)
MANUFACTURER	Arvin Industries, Columbus, Ind.
TYPE SET	AC-DC operated AM Superheterodyne Receiver
TUBES (Four)	Types 12BE6 Conv., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .23 Amp. @ 117 Volts AC
TUNING RANGE--BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod.)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001 MFD to reduce hum modulation.
2.	50MMF	High side to antenna transformer clip terminal. Low side to chassis.	1400KC	Tune to 1400KC signal	"	A3	Adjust for maximum deflection ~~while rocking tuning gang thru 1400KC signal~~.
3.	"	"	600KC	Tune to 600KC signal	"		Bend antenna section slotted rotor, plates for maximum deflection.
4.	Check coverage 540 to 1650KC. Check calibration of 540, 600, 1000 and 1400KC. If oscillator rotor plates required bending recheck antenna rotor plates for tracking and bend slotted plates if necessary.						

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PARTS LIST AND DESCRIPTIONS

ARVIN MODEL 741T

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V3	Audio Output	50C5	50C5	7CV	
V4	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■40	150	41102	AFH3-72				FP306	TVL-3422	
B	▲20	150				CO48				
C	20	25								
C2	20000		40053-203	BPD-02	DD-203				5HK-S2	
C3	47		41457-470	SI47NP0	TCZ-47				5TCC-Q47	
C4	2000		40053-202	BPD-002	D6-203	TM5D2	811-002	DC-522	5HK-D2	
C5A	5000		*2526-4	*PA-112-1	*PC-70		*1406-01		*104C4	
B	250									
C										
C6	10000		40053-103	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C7	20000		40053-203	BPD-02	DD-203				5HK-S2	
C8	10000		40053-203	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	Note 1.
C9	8.2			SI8.2NP0			NP0K-8R2			

* Items C5A, C5B, C5C, R6A and R6B are combined in one unit.
When replacing items separately items C5A and C5C should total 250MMF.
Note 1. Some Models use a 2000MMF disc in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1Meg	½	41084					Volume-Switch

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½	20061-223	BTS-22K	
R3	330KΩ	½	20061-334	BTS-330K	
R4	2.2Meg	½	20061-225	BTS-2.2Meg	
R5	10Meg	½	20061-106	BTS-10Meg	

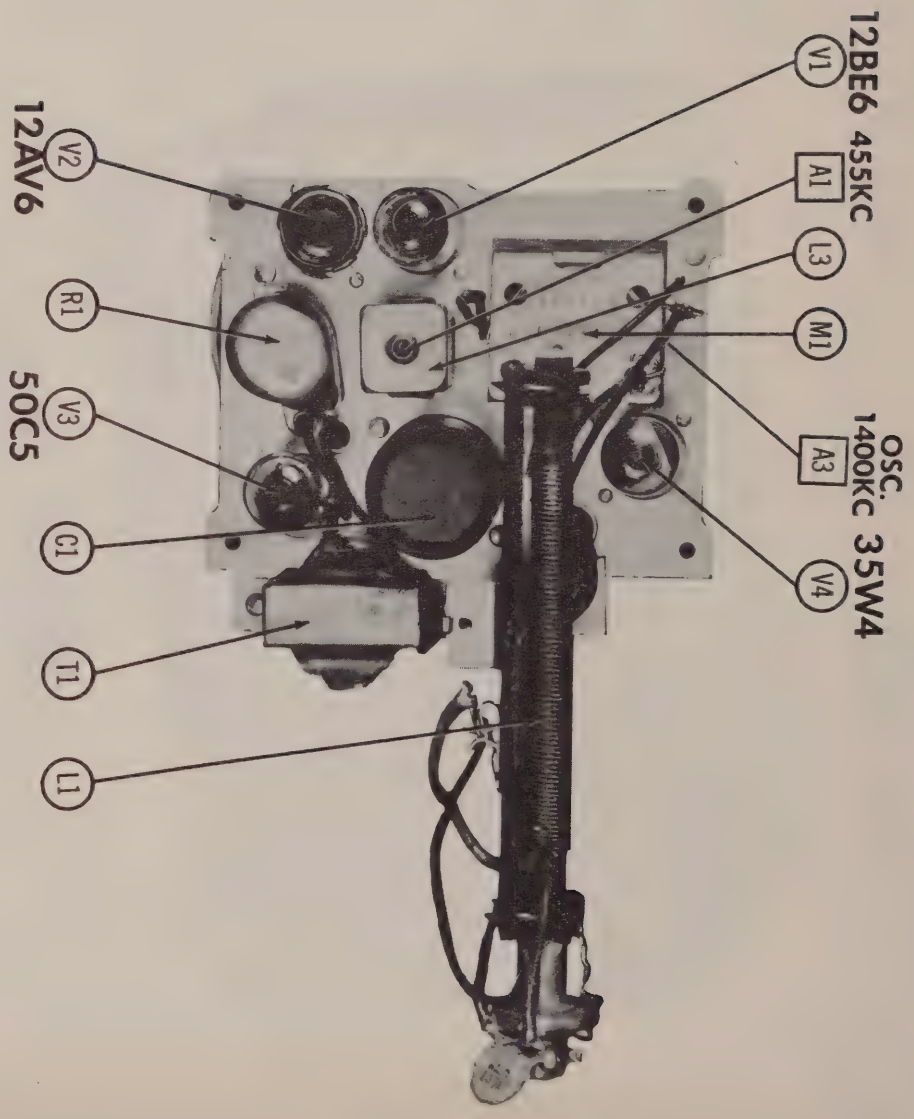
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R6A	470KΩ	½	* 25264	BTS-470K	
B	470KΩ	½		BTS-470K	
R7	120Ω	½	22381-121	BTS-120	
R8	2200Ω	1		BTA-2200	
R9	47Ω	2	19177	BTB-47	

* Items R6A, R6B, C5A, C5B, C5C, are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.3KΩ	3.1Ω	180Ω	.37Ω	41256-1	A-3332	A-3025	RO-2 ①	S-1X ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.1Ω	22875	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

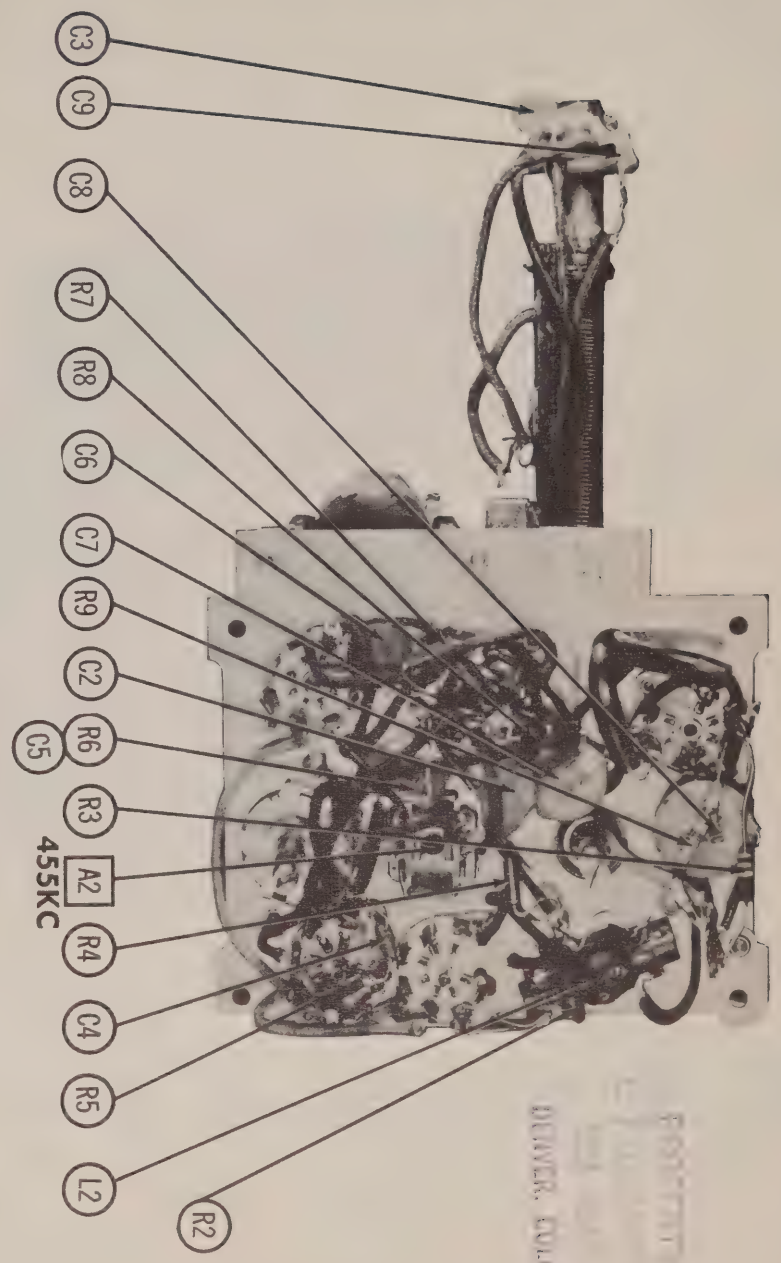
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	34Ω	.5Ω	41254-1				
L2	Osc. Coil	.7Ω	7Ω	41255-1	14-1073		69-Osc. †	
L3	IF Trans.	19Ω	19Ω	41168-1	16-6770 *	BC-355 *	12-C6 *	Pri. tapped @ 1.9Ω

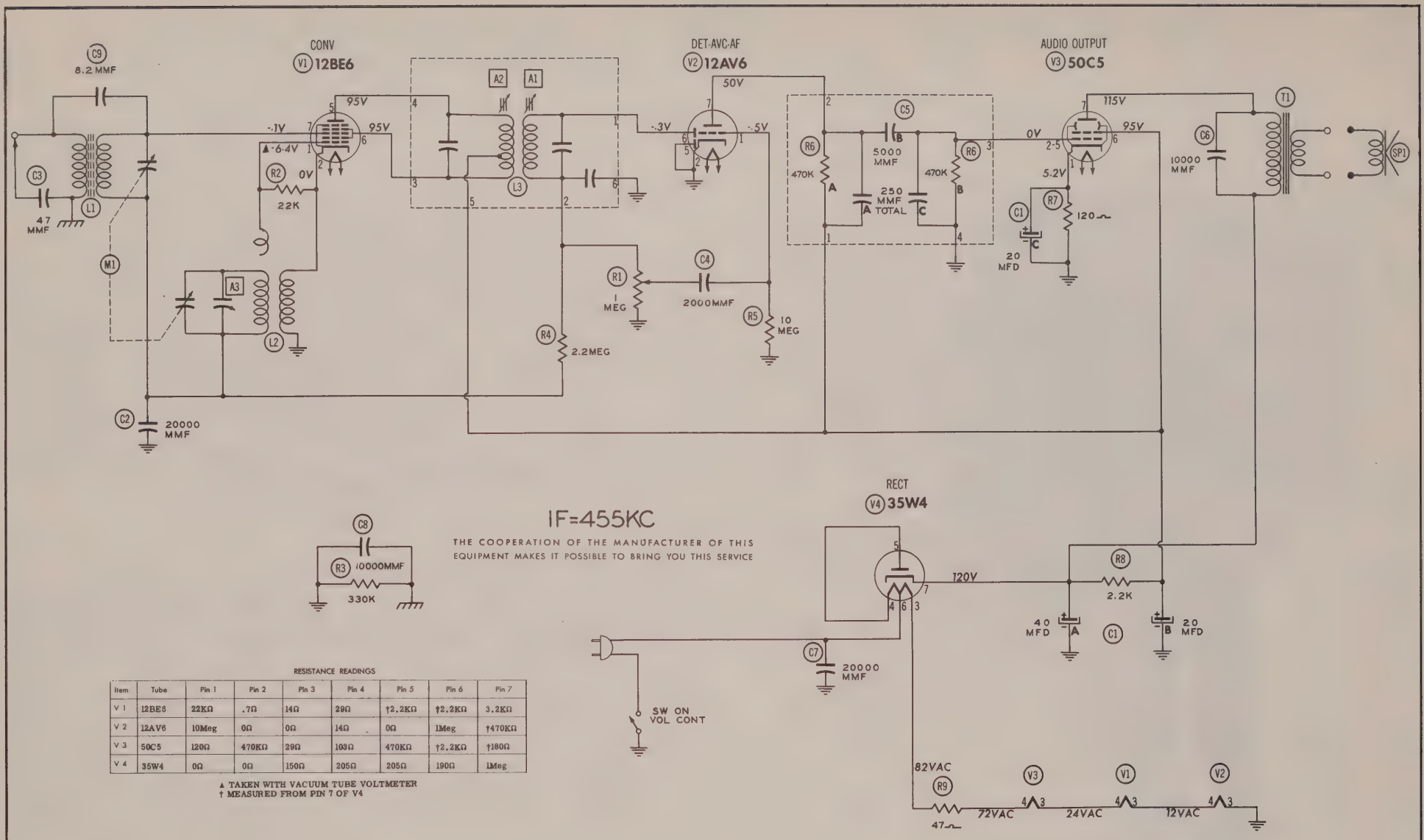
† Drill mounting hole.
* Connect B+ line to one end of primary winding.

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	Tuning Cap.	41100	(19-190MMF, 27-170MMF)
	Cabinet	41455-1	Ivory
	Cabinet	41455-2	Cherry
	Cabinet	41455-3	Citron yellow
	Cabinet	41455-4	Bitter green
	Cabinet	41455-5	Calif. tan
	Cabinet	41455-7	Coral
	Knob	41083	Tuning - clear styrene
	Knob	41084	Volume - Clear styrene
	Radio Dial	41054	

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.7Ω	14Ω	29Ω	†2.2KΩ	†2.2KΩ	3.2KΩ
V 2	12AV6	10Meg	0Ω	0Ω	14Ω	0Ω	1Meg	†470KΩ
V 3	50C5	120Ω	470KΩ	29Ω	103Ω	470KΩ	†2.2KΩ	†180Ω
V 4	35W4	0Ω	0Ω	150Ω	205Ω	205Ω	190Ω	1Meg

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V4

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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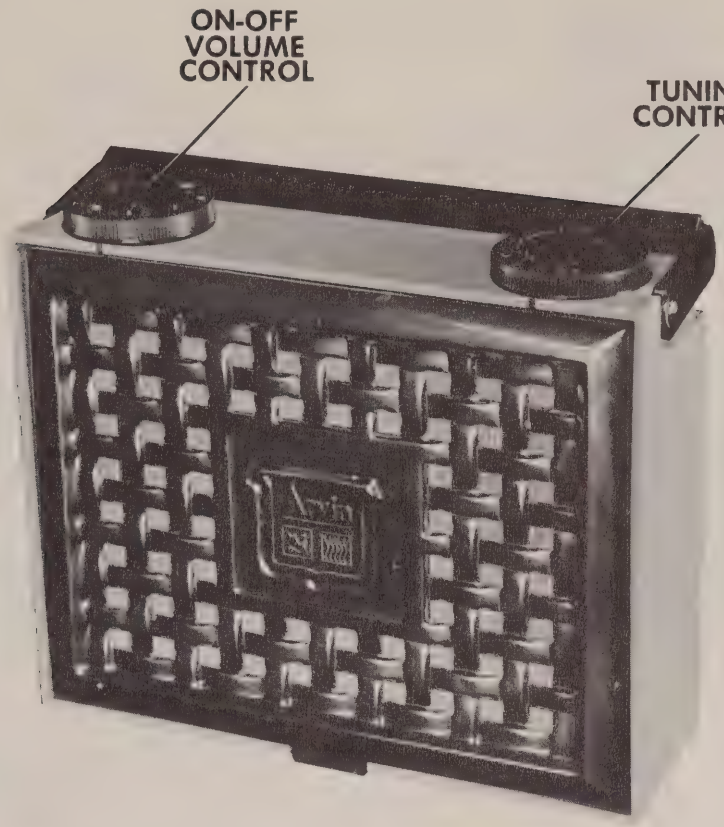
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ARVIN
MODELS 746P, 747P (Ch. RE347)



ARVIN
MODELS 746P, 747P (Ch. RE347)

TRADE NAME	Arvin Model 746P, 747P (Ch. RE347)
MANUFACTURER	Arvin Industries, Inc., Columbus, Ohio
TYPE SET	Battery Operated Portable AM Superheterodyne Receiver (Model 747P has spring wound clock)
TUBES (Four)	Types 1R5 Conv., 1T4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	1.5 Volts "A" Supply & 67.5 Volts "B" Supply
RATING	240MA @ 1.5 Volts DC & 10MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to antenna stator lug on tuning gang. Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"
4.		"	1000KC	Tune to 1000KC signal	"		Bend slotted rotor plates for maximum deflection.
5.		"	600KC	Tune to 600KC signal	"		"
6.	Repeat steps 3, 4 and 5.						

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PARTS LIST AND DESCRIPTIONS

ARVIN MODEL 746P

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1T4	1T4	6AR	
V3	Det-AVC-AF Amp.	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	10	150	A21811	PRS150/12		BR1015		TC42	TVA-1406	
C2	.05	200	A23889	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C3	50		C20203-470	SI50	D6-500	TM5Q5	GPIK-500	UC-545	5GA-Q5	Note 1
C4	10000		A22295	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C5A	150		♦A40942	♦PA-136	♦PC-165	TM5T15	GPIK-151	UC-5315	5GA-T15	
B	2000					TM5D2	811-002	DC-522	5HK-D2	
C	10000					TM5S1	811-01	DC-511	5HK-S1	
D	150					TM5T15	GPIK-151	UC-5315	5GA-T15	
E	5000					TM5D5	811-005	DC-525	5HK-D5	
C6	1000		A23078	BPD-001	DD-102	TM5D1	811-001	DC-521	5HK-D1	

Note 1. Some Models use a 47MMF in this application.

♦ Items C5A, C5B, C5C, C5D, C5E, R6A, R6B, R6C and R6D are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg	½	C40964	Q13-139	AG-66-Z	B-76-S	U-55	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	100KΩ	½	C20061-104	BTS-100K	
R3	22KΩ	½	C20061-223	BTS-22K	
R4	2.2Meg	½	C20061-225	BTS-2.2Meg	
R5	47KΩ	½	C20061-473	BTS-47K	

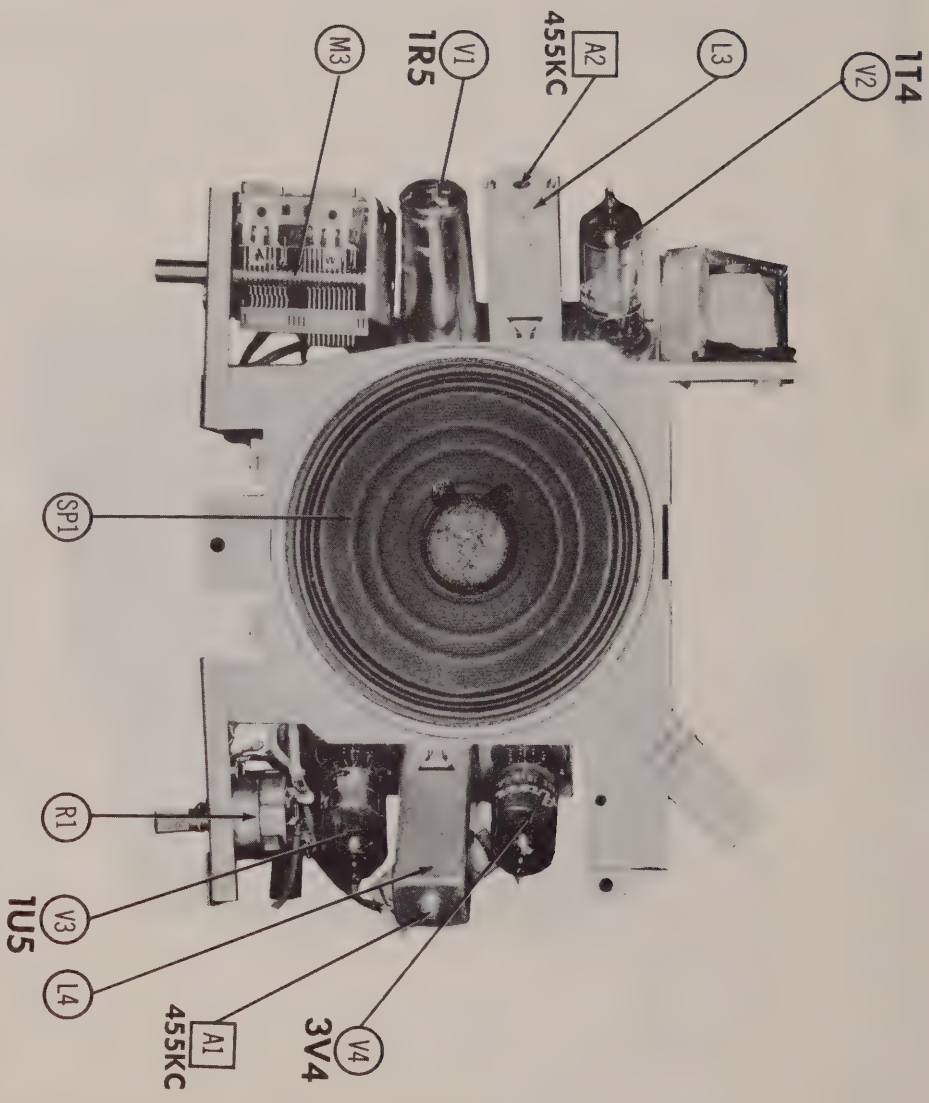
ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R6A	10Meg	½	♦A40942	BTS-10Meg	
B	4.7Meg			BTS-4.7Meg	
C	1Meg			BTS-1Meg	
D	3.3Meg			BTS-3.3Meg	
R7	330Ω	½	C20061-331	BTS-330	

♦ Items R6A, R6B, R6C, R6D, C5A, C5B, C5C, C5D, C5E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA: ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	10KΩ	3.1Ω	250Ω	.25Ω	AC40944-1	A-3329①			S-11X①	① Bend mounting tabs down. File out slots. Mount on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.1Ω	C40961	ST-113 Mod P4-X①	4A07 ①	① Cut one edge of speaker basket so tuning gang clears.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.6Ω		AD40980-1				
L2	Osc. Coil	1.9Ω	7.5Ω	AC25383-1	14-1074		71-Osc.	
L3	Input IF	25Ω	25Ω	C21797-8	16-6758	BC-352	12-C1	
L4	Output IF	21Ω	21Ω	C21797-81	16-6770	BC-355	12-C6	

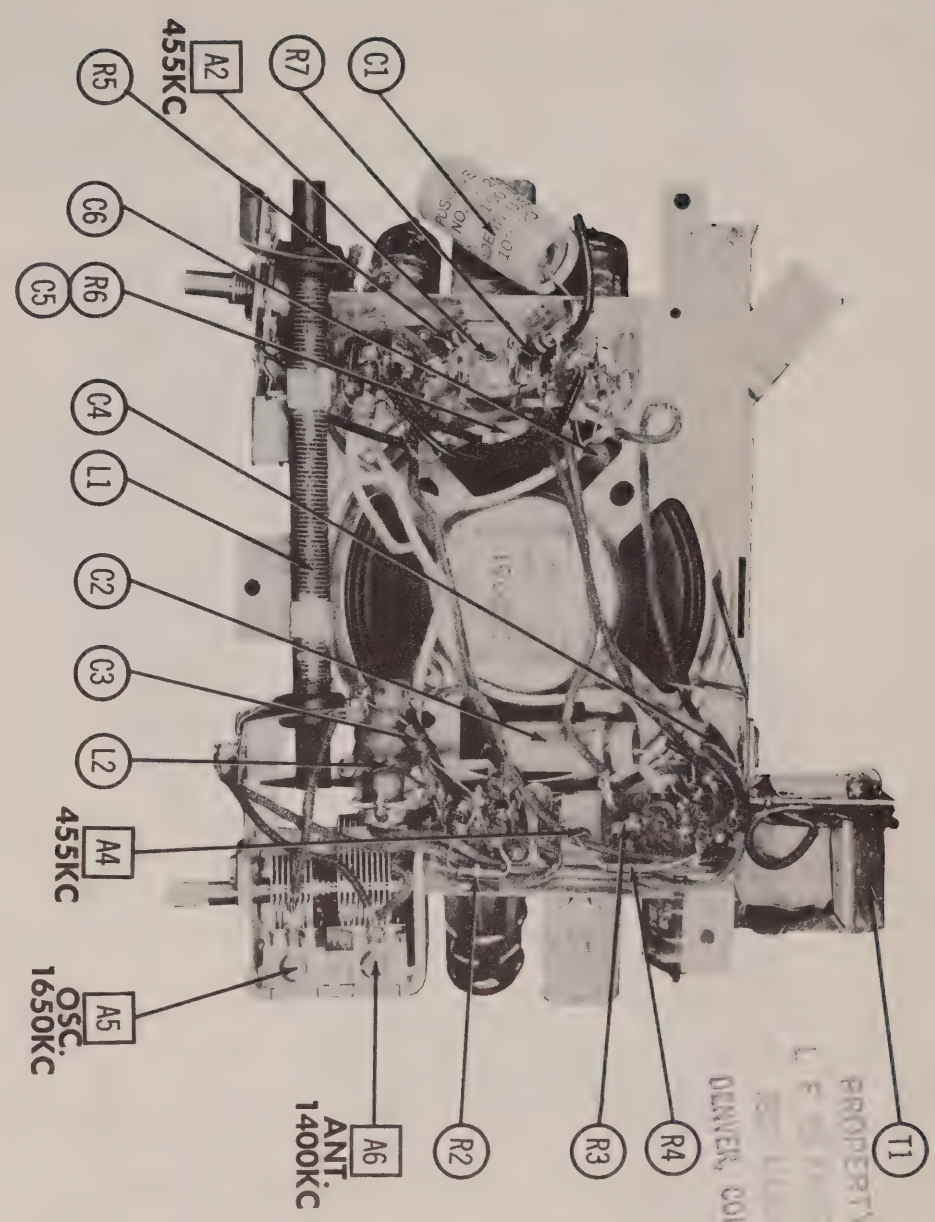
BATTERIES

ITEM No.	VOLTAGE	ARVIN PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	$1\frac{1}{2}$V"A"		964			2IR			
M2	$67\frac{1}{2}$ "B"			477			P45		

MISCELLANEOUS

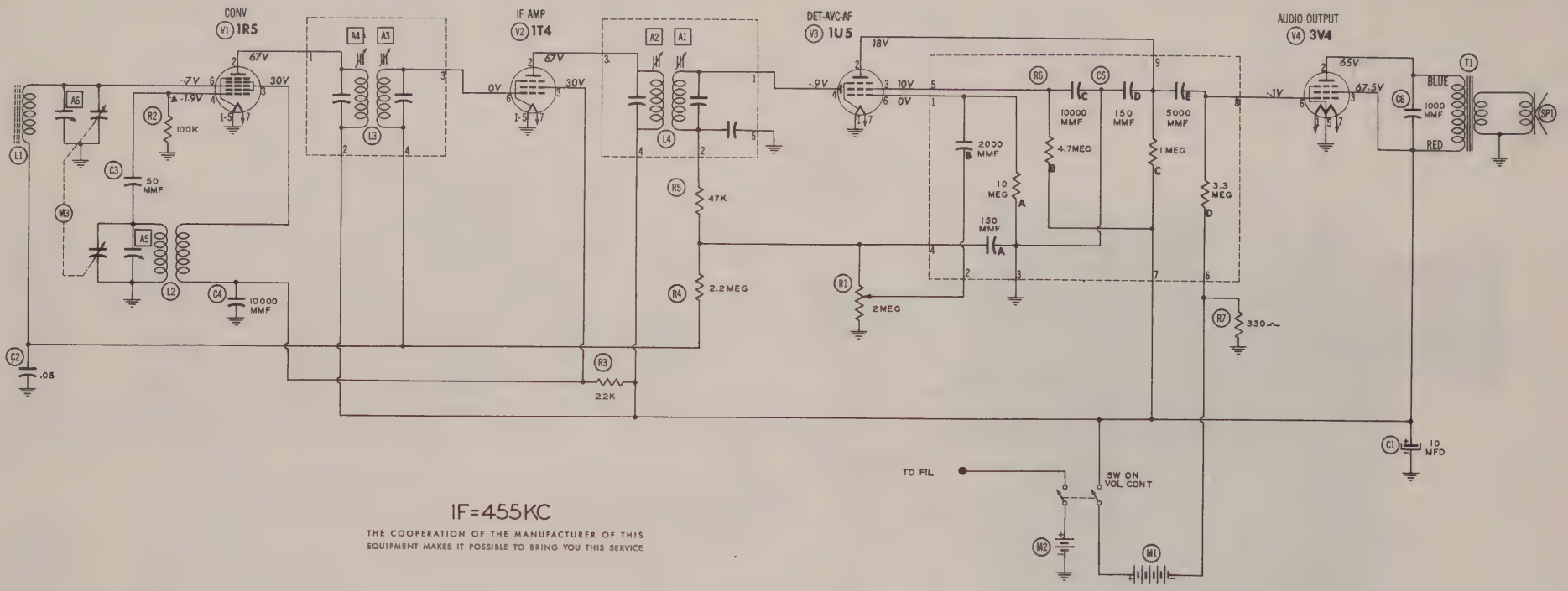
ITEM No.	PART NAME	ARVIN PART No.	NOTES
M3	Tuning cap	C40922	2gang (22-275MMF) (22-147MMF)
	Cabinet	R40796-1	maroon
	Cabinet	R40796-2	tan
	Cabinet	R40796-3	green
	Handle	C40829-1	maroon
	Handle	C40829-2	tan
	Handle	C40829-3	white
	Knob	D40962-1	Tuning-maroon
	Knob	D40962-2	Tuning-tan
	Knob	D40962-3	Tuning-white
	Knob	D40963-1	Volume-maroon
	Knob	D40963-2	Volume-tan
	Knob	D40963-3	Volume-white

CHASSIS—BOTTOM VIEW



PROPERTY OF
DENVER, COLORADO

ARVIN MODEL 746P



IF=455KC

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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0Ω	†25Ω	†22KΩ	100KΩ	0Ω	4.2Meg	*
V 2	1T4	0Ω	†21Ω	†22KΩ	2Meg	0Ω	4.2Meg	*
V 3	1U5	0Ω	†1Meg	†4.7Meg	2Meg	2Meg	10Meg	*
V 4	3V4	*	†250Ω	†0Ω	330Ω	0Ω	3.3Meg	*

† MEASURED FROM PIN 3 OF V4 (B+)
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1- DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

BELL SOUND MODELS 3710A, PA3710A-P3 (Above Serial No. 78000)

BELL SOUND MODELS 3710A, PA3710A-P3 (Above Serial No. 78000)

BELL SOUND MODELS 3710A, PA3710A-P3 (Above Serial No. 78000)

TRADE NAME	Bell Sound Models 3710A, PA3710A-P3 (Above Serial # 78000)
MANUFACTURER	Bell Sound Systems Inc., 555 Marion Rd., Columbus, Ohio
TYPE SET	AC Operated 10 Watt Audio Amplifier
TUBES	Types 6SJ7 Mic Pre-Amp., 6SN7GT AF Amp.-Phase Inv., (2) 6V6GT Audio Output 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .54 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

BELL SOUND
MODEL 3710A

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		Bell Sound PART No.	STANDARD REPLACEMENT		
V1	Mic. Pre. Amp.	6SJ7	6SJ7	8N	
V2A	AF Amplifier - Phase Inverter	6SN7GT	6SN7GT	8BD	
B	AF Amplifier - Phase Inv.	6SL7GT	6SL7GT	8BD	
V3	Audio Output	6V6GT	6V6GT	7S	
V4	Audio Output	6V6GT	6V6GT	7S	
V5	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Bell Sound PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲20	450		AFH2-51		BO40		FP234	TVL-2755	
B	■20	450		PRS50/50		BR505		TC39	TVA-1308	
C	50	50								
C2	20	450		PRS450/20		BR2045A		TC75	TVA-1709	Note 1
C3	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C4	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C5	.05	600		P688-05	D6- 502	PTE6S5		PT615	6TM-S5	
C6	.001	600		P688-001	D6-102	PTE6D1		PT621	6TM-D1	
C7	.05	600		P688-05	D6-502	PTE6S5		PT615	6TM-S5	
C8	.05	600		P688-05	D6-502	PTE6S5		PT615	6TM-S5	

Note 1. Some Models use a 8MFD @ 450V in this application.

CONTROLS

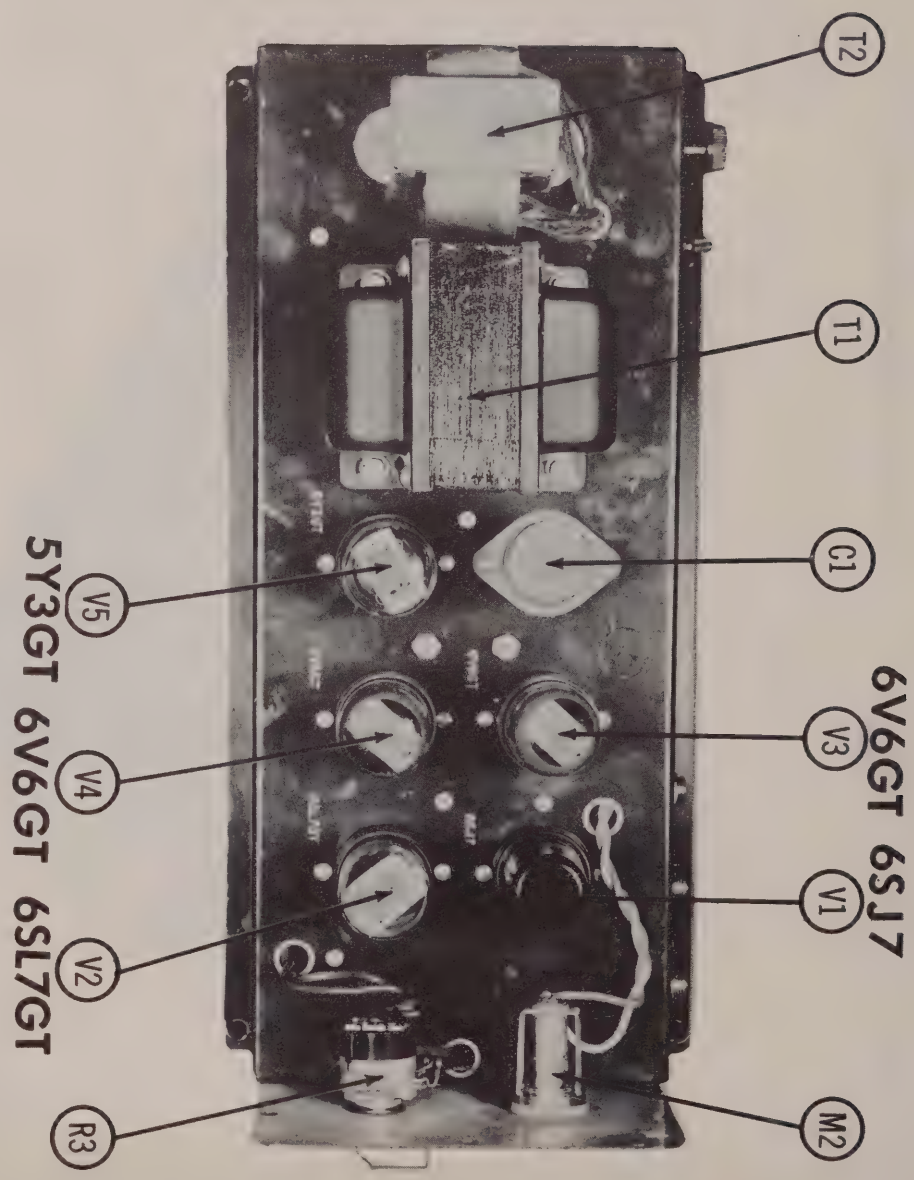
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Bell Sound PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	B20066P61	Q13-137	AG-63-Z	B-70	U-53	Phono Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
R2A	1Meg	½	B20066P61	Q13-137	AG-63-Z	B-70	U-53	Mike Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	½	B20066P63	Q13-133	AG-60-Z	B-60-S	U-48	Tone
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R3A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R3A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Bell Sound PART No.	IRC PART No.	
R4	10Meg	½		BTS-10Meg	
R5	10Meg	½		BTS-10Meg	
R6	3. 3Meg	½		BTS-3. 3Meg	
R7	470KΩ	½		BTS-470K	
R8	270KΩ	½		BTS-270K	
R9	270KΩ	½		BTS-270K	
R10	2200Ω	½		BTS-2200	
R11	270KΩ	½		BTS-270K	
R12	22KΩ	½		BTS-22K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Bell Sound PART No.	IRC PART No.	
R13	270KΩ	½		BTS-270K	
R14	47KΩ	½		BTS-47K	
R15	4. 7Meg	½		BTS-4. 7Meg	
R16	470KΩ	½		BTS-470K	
R17	200Ω	10		1 3/4A-200	
R18	470KΩ	½		BTS-470K	
R19	400Ω	10		1 3/4-400	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	Bell Sound PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .54A	610VCT .061ADC	5VAC ⑤ 2A	6.3VCT @1.43A	B-20076		P-3151	PV-70A	R-9A ①

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Bell Sound PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	10KΩ CT	500Ω tap @ 16Ω 8Ω, 4Ω 2Ω	520Ω CT	50Ω tap @ 1.3Ω .8Ω .7Ω .55Ω	B-20231		A-3027 ①			① Drill one new mounting hole.

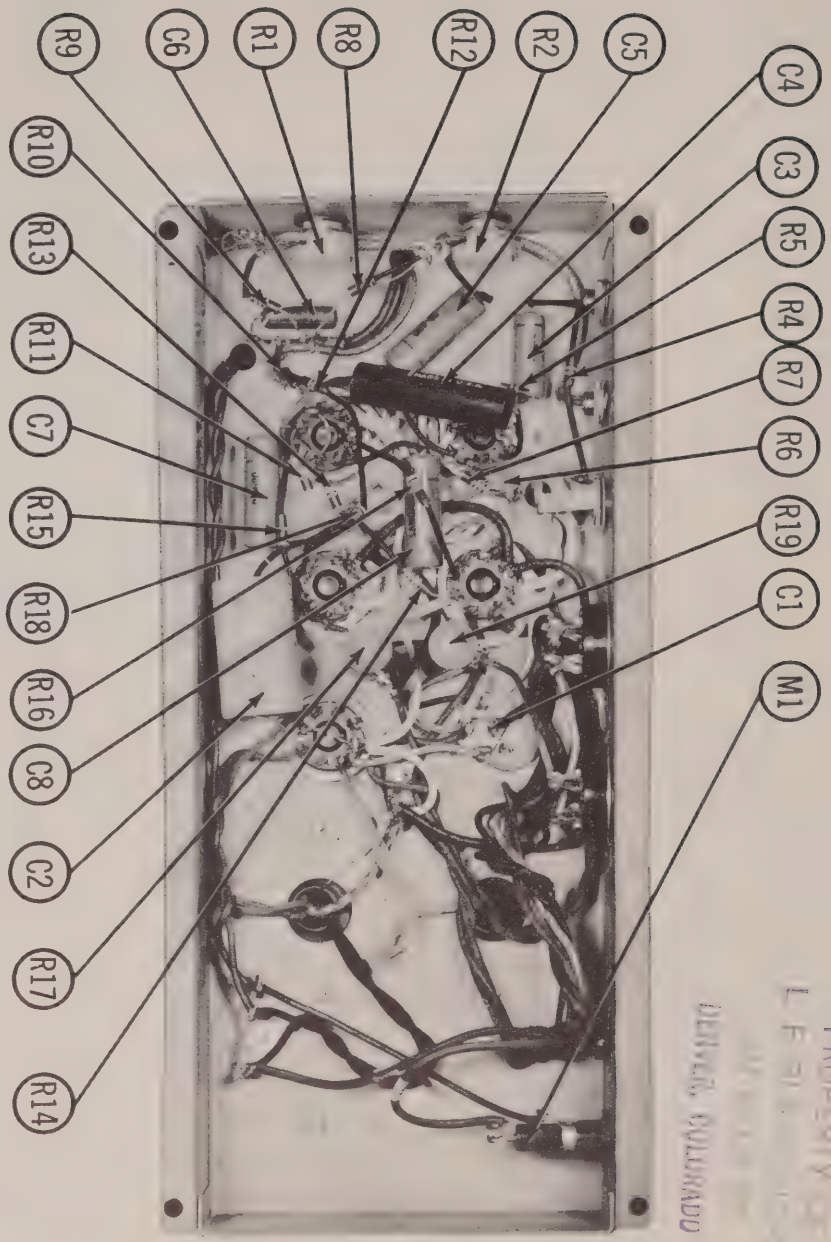
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Bell Sound PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2AMP 250V			312002 (3AG 2 Amp)	342001	AGC 2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	Bell Sound PART No.	NOTES
M2	Pilot Light		Type #44

CHASSIS—BOTTOM VIEW



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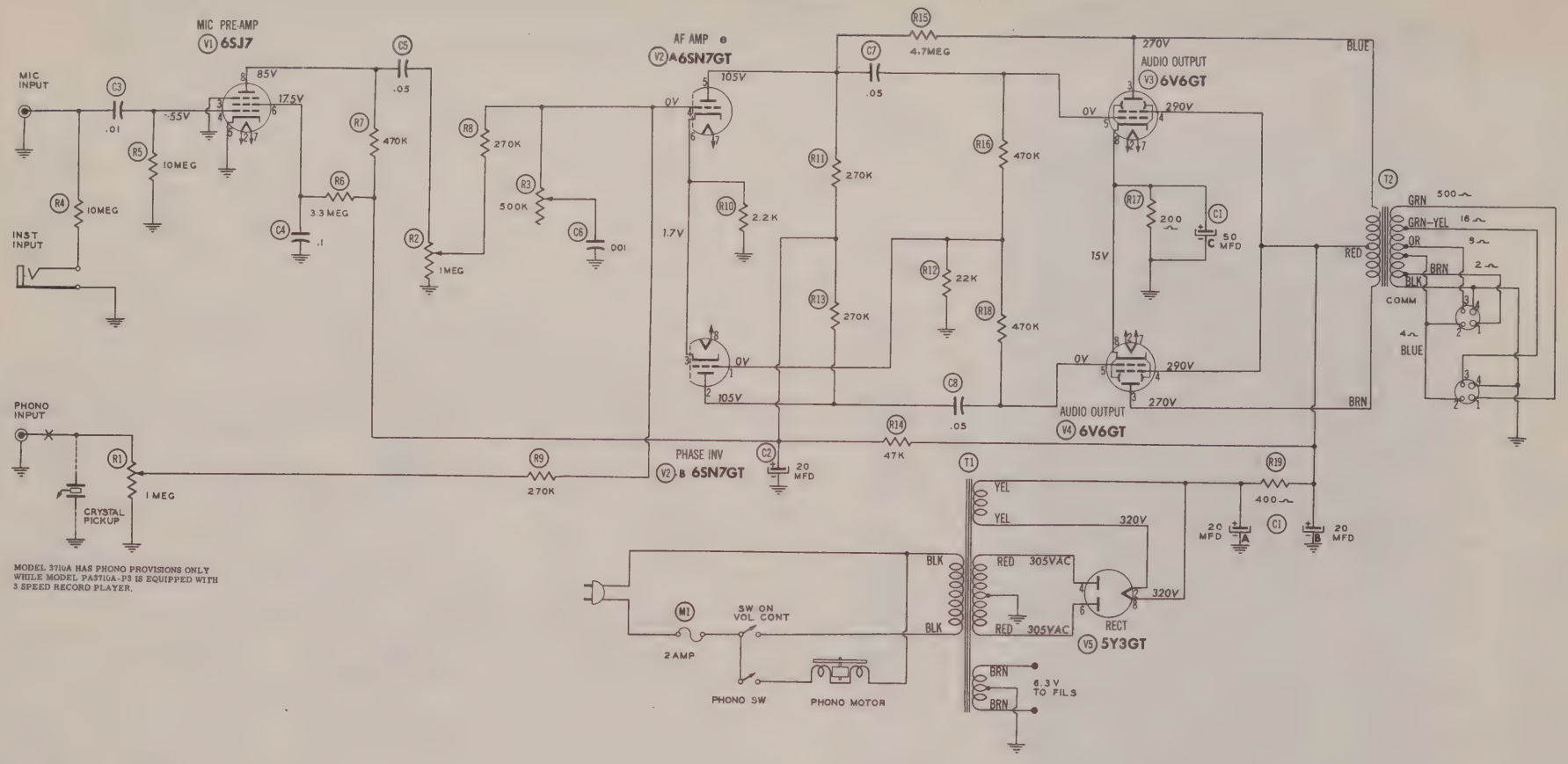
DENVER, COLORADO

BELL SOUND MODEL 3710A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0Ω	.1Ω	0Ω	10Meg	0Ω	†3.3Meg	.1Ω	†520KΩ
V 2	6SN7GT	22KΩ	†320KΩ	2.2KΩ	600KΩ	†300KΩ	2.2KΩ	.1Ω	.1Ω
V 3	6V6GT	0Ω	.1Ω	†260Ω	†400Ω	490KΩ	INF	.1Ω	200Ω
V 4	6V6GT	0Ω	.1Ω	†260Ω	†400Ω	490KΩ	INF	.1Ω	200Ω
V 5	5Y3GT	0Ω	200KΩ	INF	200Ω	0Ω	220Ω	INF	200KΩ

† MEASURED FROM PIN 2 OF V15.

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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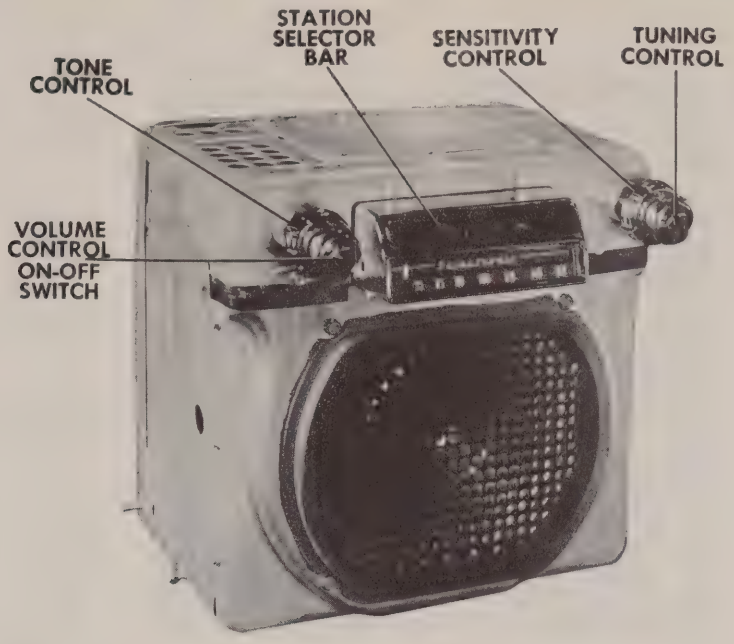
1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values make possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.



PROPERTY OF
DENVER, COLORADO

BUICK
MODEL 981323

TRADE NAME	Buick Model 981323 (For Series 50 & 70, 1953 Buick Cars)
MANUFACTURER	Buick Motors, Div. of General Motors, Detroit, Michigan
TYPE SET	Battery Operated Custom-built Automobile Superheterodyne Receiver
TUBES (Eight	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12BF6 Det.-AVC-AF Amp., (2) 12V6GT Audio Output, 12AU7 Trigger Amp., 0Z4 Rectifier
POWER SUPPLY	12 Volts Storage Battery — RATING 3.4 Amp. @ 12 Volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Attenuate generator output to maintain 2 volts maximum at VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (grid) of 12BE6 (V2). Low side to chassis.	262KC (400%Mod)	High frequency end stop	DC probe to ungrounded side of C2. Common to chassis.	A1, A2, A3	To tune to high frequency end stop insert .070" feeler gauge (or bare #13 wire) in slot against high frequency stop. Depress station selector bar and let arm run against feeler gauge. Turn radio off and then back on. Adjust A1, A2,and A3 in order given for maximum deflection.
2.	"	High side to pin 7 (screen) of 12BE6 (V2). Low side to chassis.	"	"	"	A4	Adjust for MINIMUM deflection.
3.	82MMF	High side to antenna receptacle. Low side to chassis.	1615KC	High frequency end stop.	"	A5, A6, A7	Use feeler gauge as in step. 1. Check mechanical setting of oscillator core (A10). Rear of core should be 1 25/32" from mounting end of coil form. Adjust A5, A6 and A7 in order given for maximum deflection.
4.	"	"	600KC	Tune to 600KC signal	"	A8, A9	Adjust for maximum deflection.
5.	"	"	1615KC	Tune to 1615KC signal	"	A6, A7	"
6.	"	"	1000KC	Tune to 1000KC signal	"		With pointer adjustment screw, set pointer to the first "0" of "100" on the dial scale.
7.	With radio installed in car and antenna fully extended tune to a weak station between 600 and 1000KC and adjust A7 for maximum volume.						

No pushbutton set-up is necessary. However, the number of stations received by pushbutton can be controlled by adjustment of the sensitivity control.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		BUICK PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det-AVC-AF Amp.	12BF6	12BF6	7BT	
V5	Audio Output	12V6GT	12V6GT	7S	
V6	Audio Output	12V6GT	12V6GT	7S	
V7	Trigger Amp.	12AU7	12AU7	9A	
V8	Rectifier	0Z4	0Z4	4R	

CAPACITORS

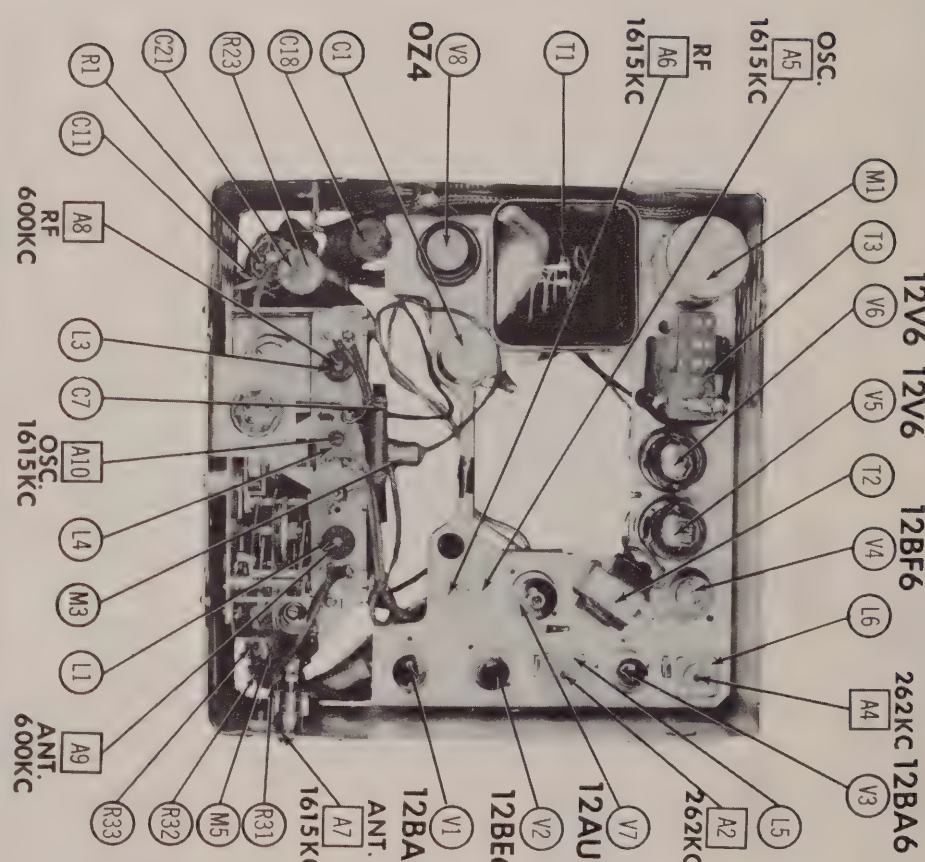
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	BUICK PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	20	400	M908	AFH3-120		CO99		FP345.8	TVL-3678	
B	20	400								
C	20	25								
C2	.05	200	6512	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C3	.1	400	6513	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C4	68	500	G680							
C5	.05	200	6512	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C6	39	500	G390							
C7	260		7257567							
C8	.1	200	6590	P288-1	DF-104	PTE4P1		PT401	2TM-P1	
C9	100		1219498	1468-0001	D6-101	5W5T1	GP2K-101	MC235	1FM-31	
C10	100		1219498	1468-0001	D6-101	5W5T1	GP2K-101	MC235	1FM-31	
C11	120	500	G121		D6-121		GP2K-121			
C12	.0025	400	7240578	P488-0025	D6-252	PTE4D25	GP2-333-252	PT4225	4TM-D25	
C13	.005	600	6531	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C14	220	500	G221		D6-221		GP2K-221			
C15	.2	400	6514	P488-2		PTE4P2		PT402	4TM-P2	
C16	.025	400	1213312	P488-025		PTE4S25		PT4125	4TM-S25	
C17	.0015	800	7236134	P1088-0015		PTE10S25		PT10125	MB-L15	
C18	.5	100	6592	VHC-36		MP2P5		RF-480	HC-3	
C19	47	100	7257906	VHC-36		MP2P5		RF-480	HC-3	
C20	.002	600	6528	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C21	.5	200	6592	P288-5		PTE4P5		PT405	4TM-P5	
C22	.007	1600	H702	P1688-007		PTE16D7		PT1627	MB-D7	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BUICK PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	300KΩ		7263119				UF55A	Tone
B	1Meg		Not Req.				UR16-T35	Volume
C	Shaft		Not Req.				EB-214	Attach to R1A
D	Switch		Not Req.				US-26	Attach to R1B

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA BUICK PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	2. 2Meg	1/2	A225	BTS-2. 2Meg	
R3	100Ω	1/2	A101	BTS-100	
R4	10KΩ	1/2	B103	BTS-10K	
R5	330KΩ	1/2	A334	BTS-330K	
R6	22KΩ	1/2	A223	BTS-22K	
R7	1. 5Meg	1/2	A155	BTS-1. 5Meg	
R8	12KΩ	2	1212491	BTB-12K	
R9	150Ω	1/2	A151	BTS-150	
R10	10Ω	1	A100	BTA-10	
R11	1Meg	1/2	1220169	BTS-1Meg	
R12	1. 5Meg	1/2	1219492	BTS-1. 5Meg	
R13	47KΩ	1/2	A473	BTS-47K	
R14	1000Ω	1/2	1220176	BTS-1000	
R15	3300Ω	1/2	1220173	BTS-3300	
R16	1Meg	1/2	A105	BTS-1Meg	
R17	27KΩ	1	B273	BTA-27K	
R18	1. 5Meg	1/2	A105	BTS-1. 5Meg	
R19	100KΩ	1/2	A104	BTS-100K	
R20	360Ω	1	7234563	BTA-360	
R21	120KΩ	1/2	1213271	BTS-120K	
R22	47KΩ	1	B473	BTA-47K	
R23	13KΩ	1	7231539	BTA-13K	Note 1
R24	6800Ω	1	1216154	BTA-6800	
R25	3. 3Meg	1/2	A335	BTS-3. 3Meg	
R26	1000Ω	1/2	1220176	BTS-1000	
R27	47KΩ	1	1220188	BTA-47K	
R28	1800Ω	2		BTB-1800	
R29	15KΩ	1	B153	BTA-15K	
R30	820Ω	1	1216152	BTA-820	
R31	150Ω	1/2	A151	BTS-150	
R32	560Ω	1/2	1213229	BTS-560	
R33	2200Ω	1/2	A222	BTS-2200	

Note 1. Late models sets may use a 12KΩ resistor in this application.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA BUICK PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	12VCT ⓐ2A	450VCT .063A			6064		P-4051①		① Drill new mounting holes

TRANSFORMER (INPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA BUICK PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	1.8KΩ CT				6061					

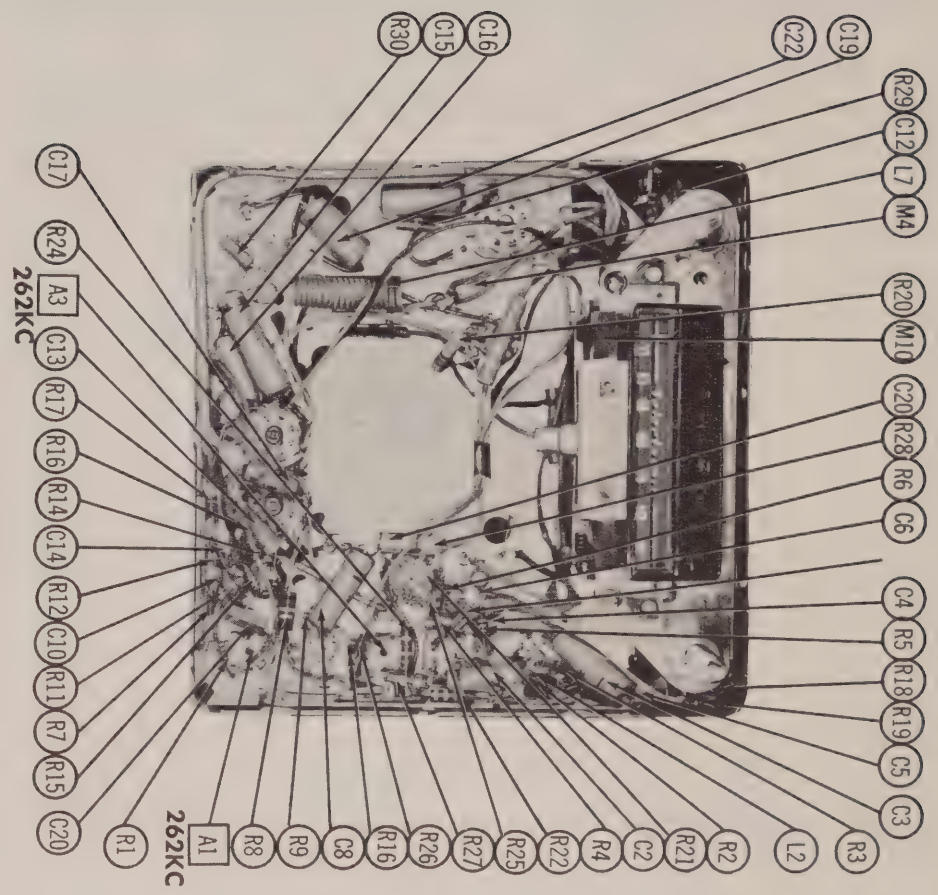
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA BUICK PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T3	7. 8KΩ CT	3. 8Ω	368Ω CT	. 34Ω	6063	A-3852	A-2936	RO-110	S-15X	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA BUICK PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	8"	PM	3. 8Ω	6105	ST-115 P8-V	8A31	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	BUICK PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	10Ω		7257979				
L2	RF Coupling	4.8Ω		7240251			4626	28 Microhenries
L3	RF Coil	10Ω		7257979				
L4	Osc. Coil	.9Ω	4Ω	7263287				
L5	Input IF	40Ω	40Ω	1219508	16-6752	BC-350	12-H1	
L6	Output IF	31Ω	31Ω	1220204	16-6754	BC-354	12-H6	
L7	Fil. Choke	0Ω		1217846				

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA				NOTES
				BUICK PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12V	115 ∿	8550	6330	G874	6330	

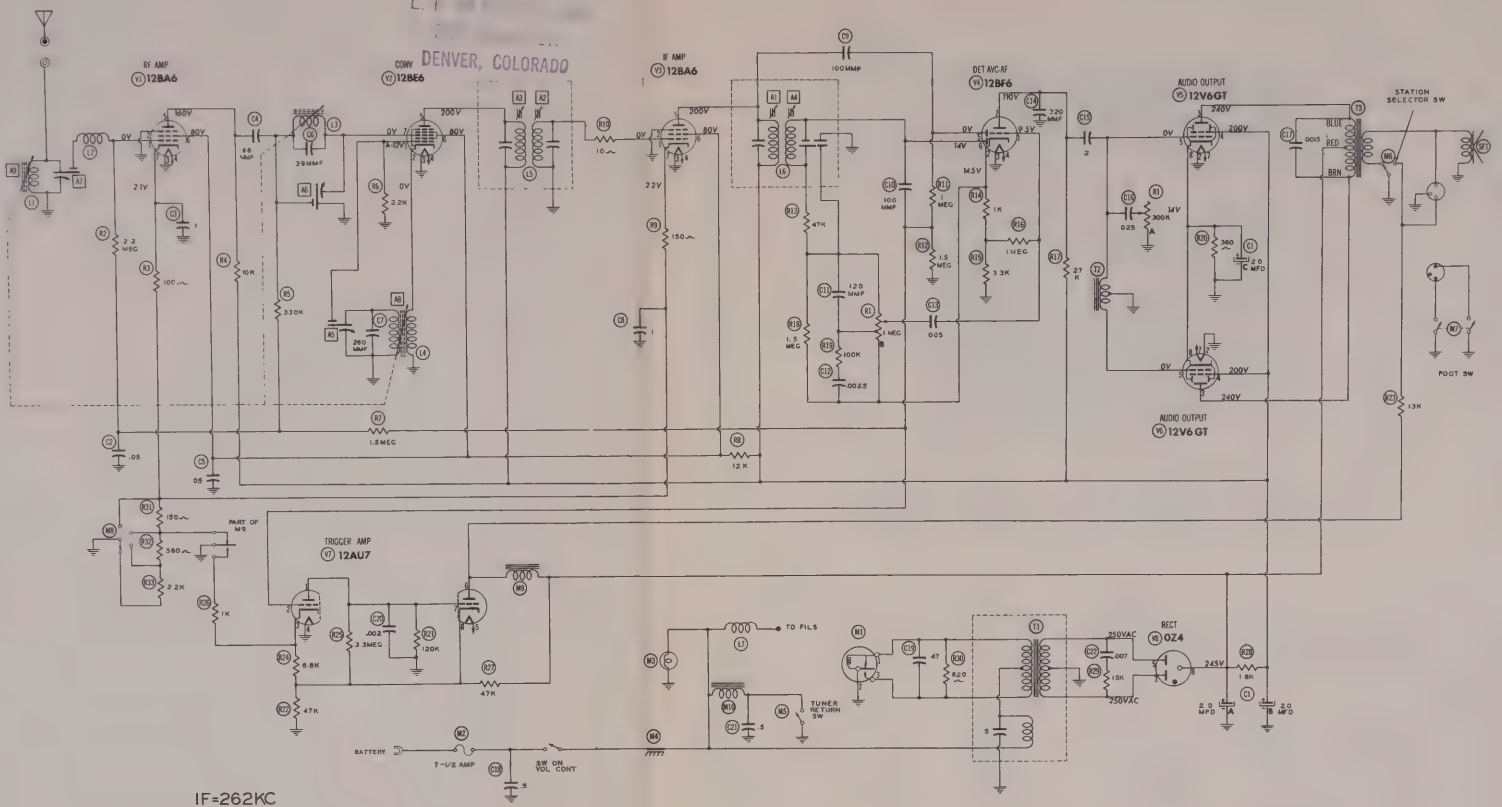
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BUICK PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	7AG	7½A	7263227	1220177	30307.5 (7AG-7½A)	155009	AGW7½	HRH

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	BUICK PART No.	NOTES
M3	Dial light	57	#57 bayonet
M4	Spark plate	1217848	
M5	Switch	7263340	Tuner return
M6	Switch	7263345	Station selector
M7	Switch	7258903	Foot control
M8	Switch	7263451	Sensitivity control
M9	Relay	7263365	
M10	Solenoid	7263425	Includes plunger
A7	Trimmer cap	7260158	Antenna adj.
A5, A6	Trimmer cap	7242454	Dual-R. F. & Osc. adj.
	Dial glass	7263447	
	Knob	1318801	2used on-off volume, manual tuning
	Knob	1341337	Sensitivity
	Knob	1341536	Tone



RESISTANCE READINGS

Stage	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12BA6	4.5Ω	0Ω	0Ω	.1Ω	71.8KΩ	73.8KΩ	350Ω		
V 2	12BE6	12KΩ	4Ω	0Ω	.1Ω	71.8KΩ	73.8KΩ	5.5Meg		
V 3	12BA6	50Ω	0Ω	.1Ω	0Ω	71.8KΩ	73.8KΩ	350Ω		
V 4	12BF6	2Meg	4.3KΩ	.1Ω	0Ω	3.5Meg	560KΩ	73.8KΩ		
V 5	12V6GT	INF	0Ω	71.8KΩ	71.8KΩ	80Ω	INF	.1Ω	350Ω	
V 6	12V6GT	INF	0Ω	71.8KΩ	71.8KΩ	80Ω	INF	.1Ω	350Ω	
V 7	12AU7	10MΩ	1.5Meg	47KΩ	0Ω	.1Ω	71.8KΩ	147KΩ	147KΩ	.1Ω
V 8	0Z4	Ω	INF	220Ω	INF	220Ω	INF	INF	80KΩ	

† MEASURED FROM PIN 8 OF V8
A TAKEN WITH VACUUM TUBE VOLTMETER
B READING TAKEN WITH M9 (SENSITIVITY SWITCH) ON MINIMUM SENSITIVITY COUNTER CLOCKWISE POSITION.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measures at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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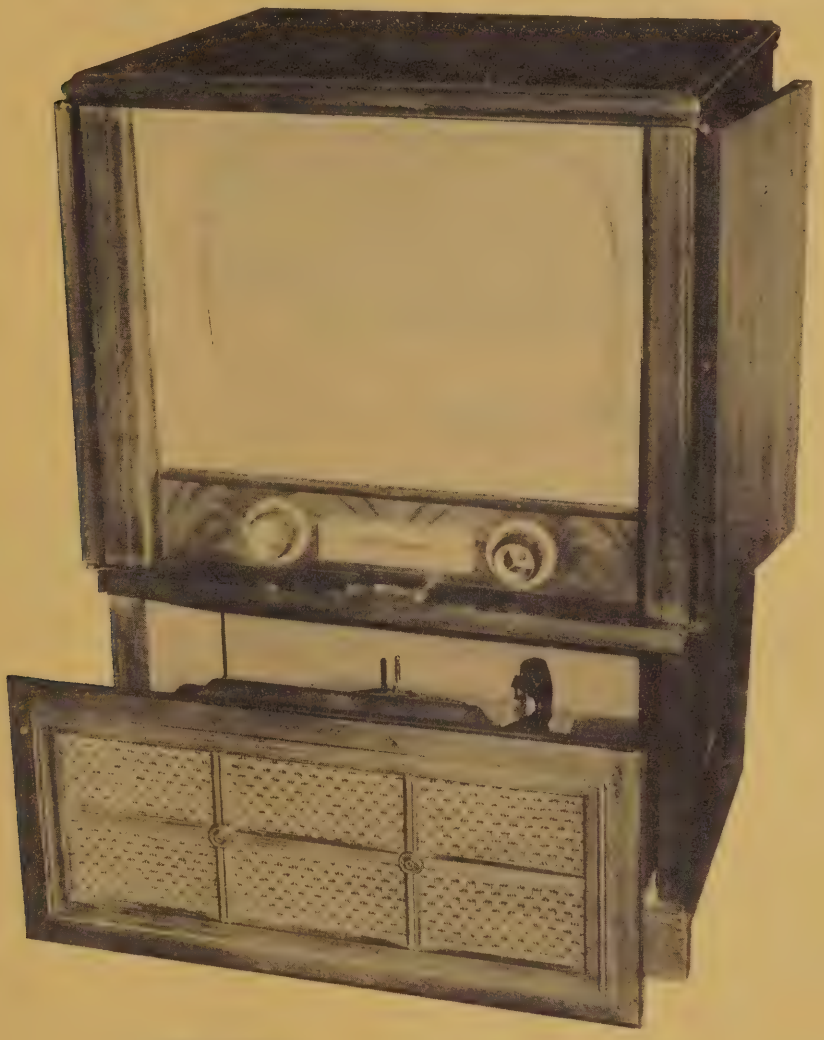

MODEL 22K38

CBS-COLUMBIA
MODEL 22K38 (Ch. 821-20 & AM Tuner 2A1)

DENVER, COLORADO

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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CBS-COLUMBIA
MODEL 22K38 (Ch. 821-20 & AM Tuner 2A1)

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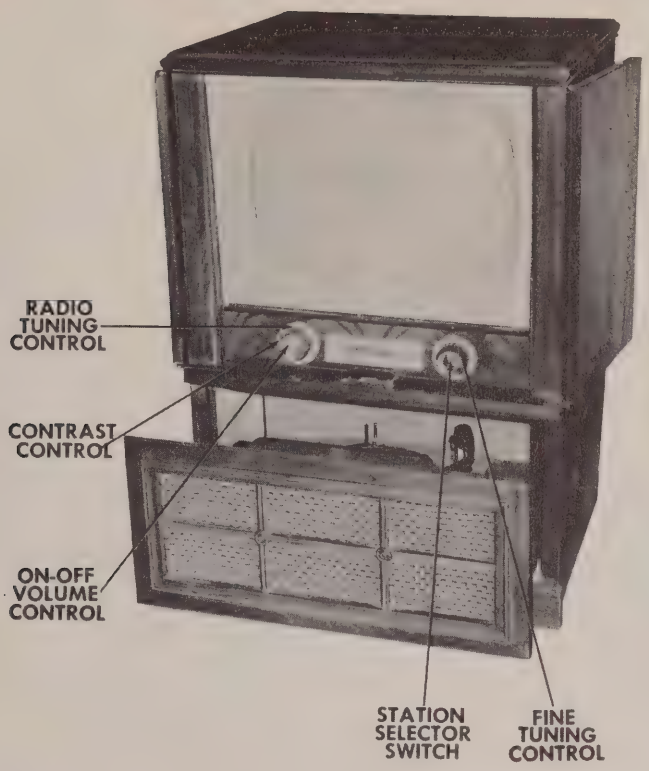

CBS-COLUMBIA
MODEL 22K38 (Ch. 821-20 & AM Tuner 2A1)

TRADE NAME	CBS-Columbia Model 22K38 (Ch. 821-20, AM Tuner 2A1)
MANUFACTURER	CBS-Columbia, 170-53rd. St., Brooklyn 32, N. Y.
TYPE SET	TV-AM- Phono Combination Receiver
TUBES	Twenty-three (TV-Twenty-one, AM Tuner Two)
POWER SUPPLY	110-120 Volts AC-60 cycle RATING 1.9Amp. @ 117 Volts AC
TUNING RANGE	TV Channels 2 thru 13, Video IF 25. 75 MC, Sound IF 21. 25MC (Intercarrier AM Radio 535-1620KC, AM IF 455KC

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FOR SERVICE INFORMATION AND RECORD CHANGER. SEE V-M MODEL 950, PHOTOFACT SET 107 FOLDER 13, ALSO SUPPEMENT SET 131, FOLDER 17 OR RECORD CHANGER MANUAL CM-3.

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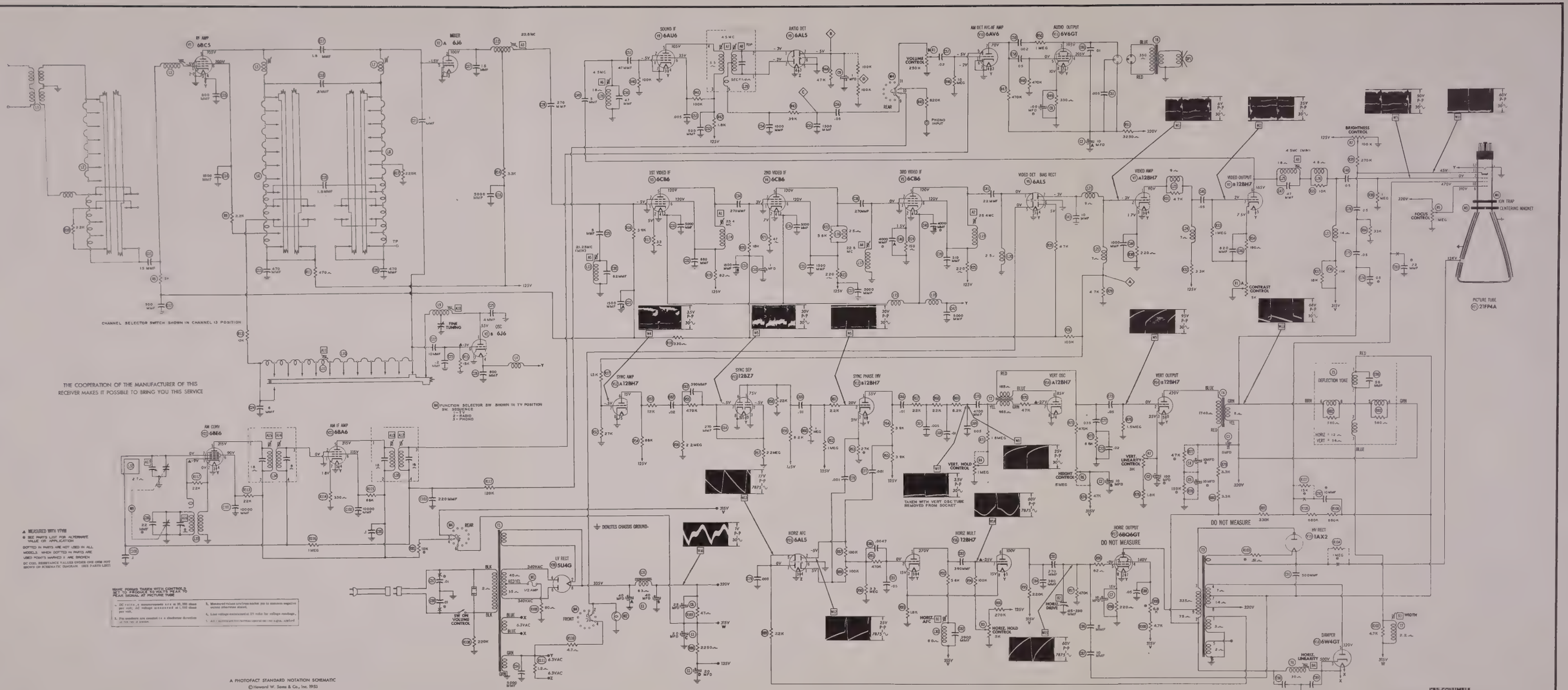
CBS-COLUMBIA
MODEL 22K38 (Ch. 821-20 & AM Tuner 2A1)
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
FUNCTION SELECTOR SW. SHOWN IN TV POSITION
SW. SEQUENCE
1 - TV
2 - RADIO
3 - PHONO
DENOTES CHASSIS GROUND
DO NOT MEASURE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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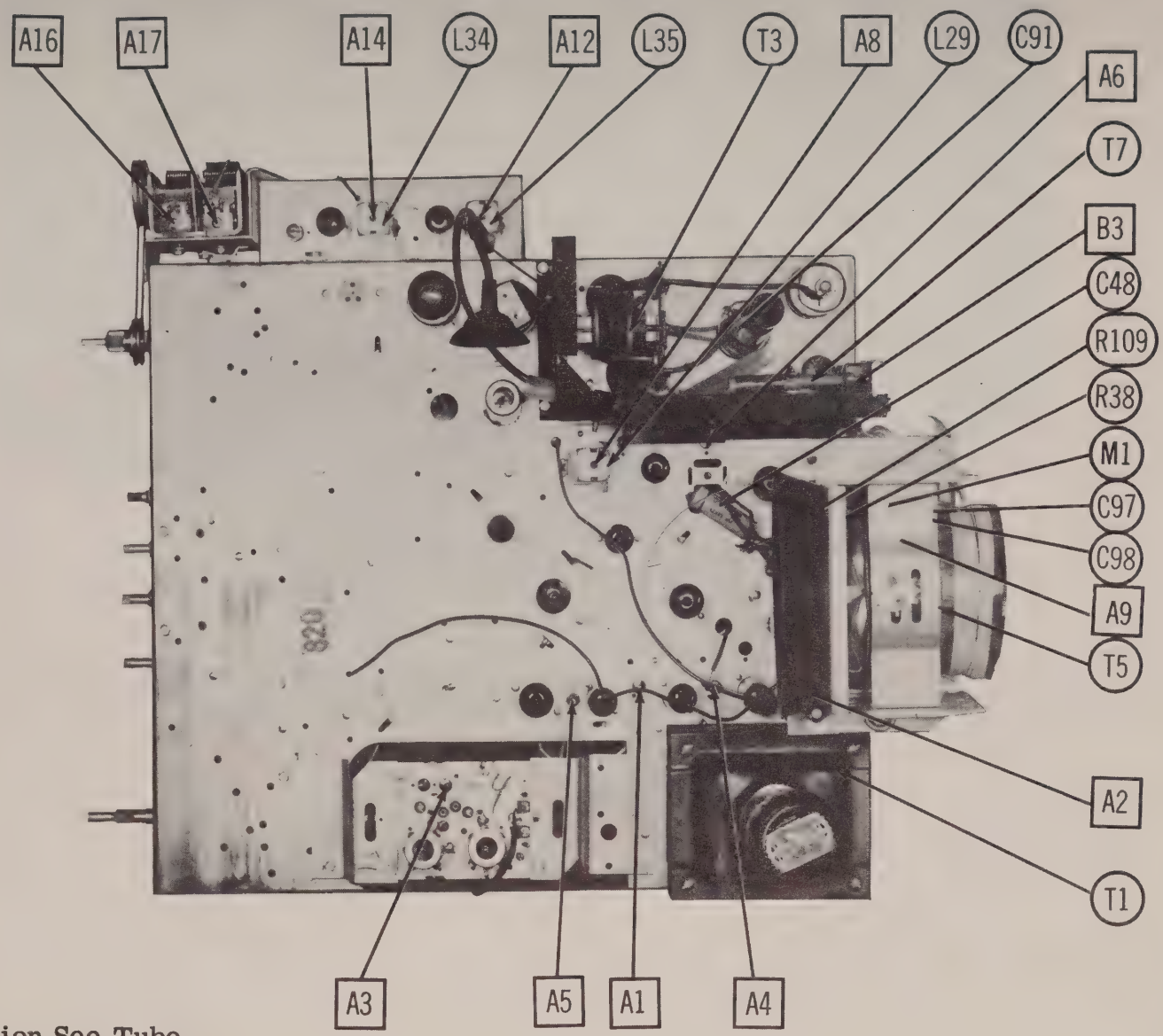
CBS-COLUMBIA
MODEL 22K38 (Ch. 821-20 & AM Tuner 2A1)



For Tube Location See Tube Placement Chart Page 5.

CHASSIS TOP VIEW

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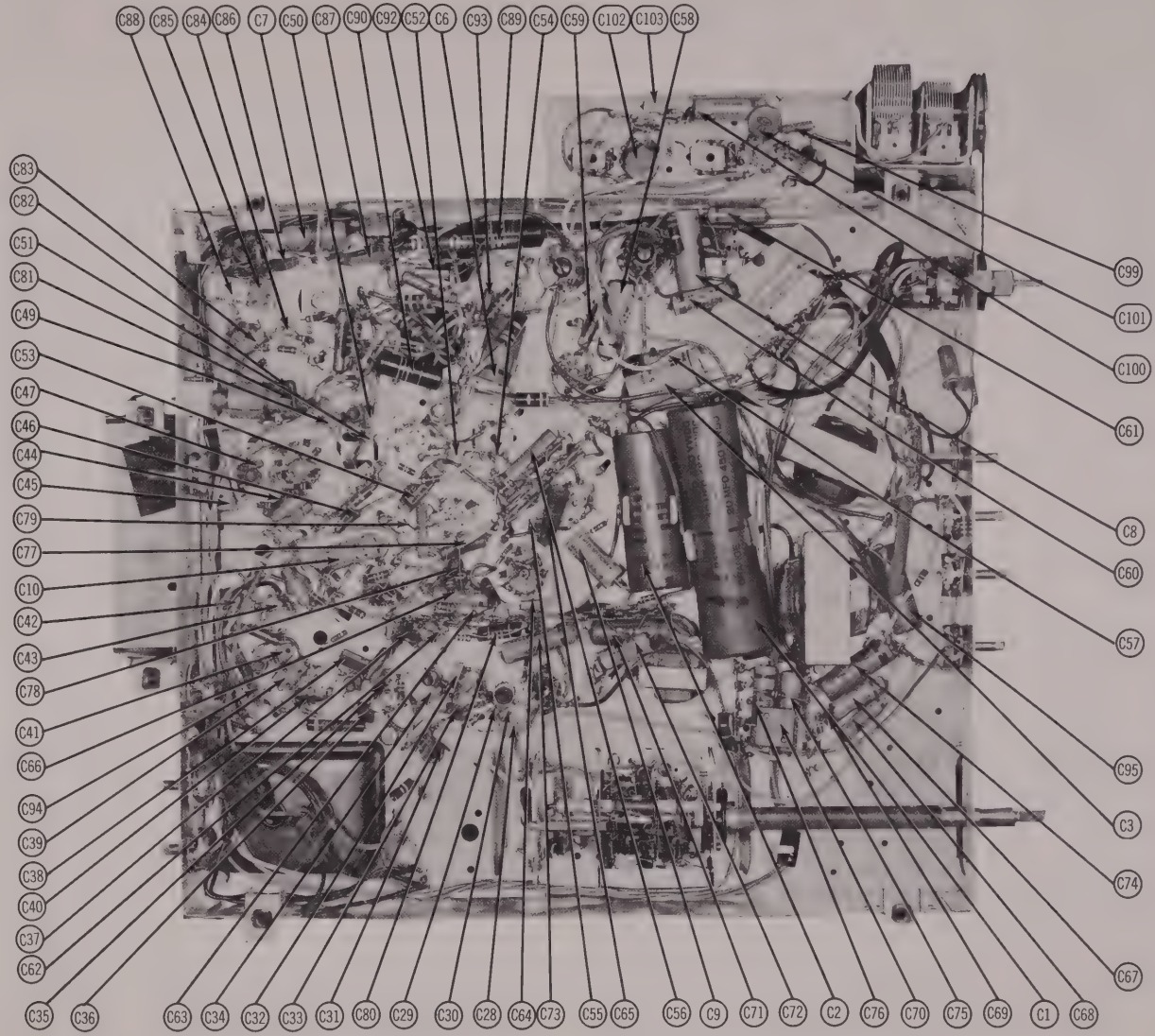
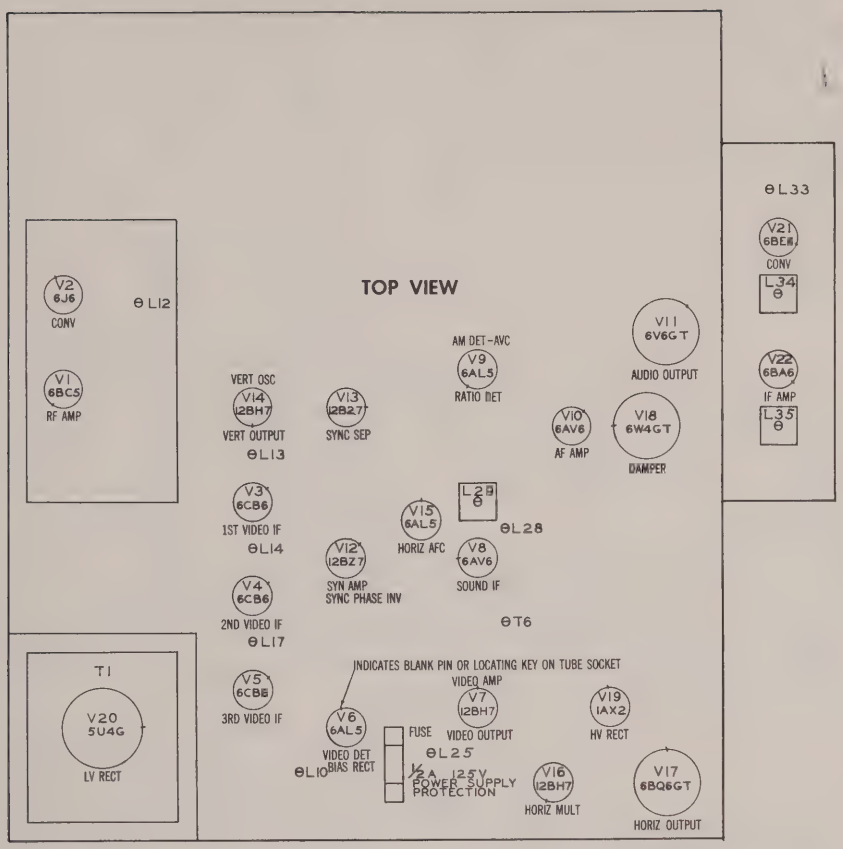


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V20, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V7
No pic, no sound, has snow -V1, V2, V3
No pic, has sound, has raster - V7, V21
Has pic, no sound - V8, V9, V10, V11

SYNC FAILURE
No vert. sync - V12, V14
No horiz. sync - V12, V15, V16
No vert. or horiz. sync -V12, V13

SWEEP FAILURE
No raster, has sound - V16, V17, V18, V19, V21
No vertical deflection - V14
Poor vert. linearity or foldover - V14
Poor horiz. linearity or foldover - V16, V17, V18
Narrow picture - V16, V17, V18, V19, V20
Vert. off freq. - V12, V14
Horiz. off freq. - V12, V15, V16

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V16).
Turn the radio, phono, TV function switch to "TV".

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroreous indications.
Use a 10KΩ isolating resistor in series with the dc probe of the VTVM.
Attenuate signal generator output to maintain 3 volts at VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25.4MC (Unmod.)	Any	DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	22.8MC	"	"	A3, A4	"
3.	"	"	21.25MC	"	"	A5	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Attenuate sweep generator output to maintain 5 volts peak to peak vertical deflection on oscilloscope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.25MC 25.75MC	Any	Vert. amp. thru 10KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 1. If necessary retouch A1 through A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to pin 2 (grid) of 12BH7 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A6, A7	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point (C). Common to point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to pin 2 (grid) of 12BH7 (V7). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point (B). Low side to chassis.	A6, A7	Disconnect stabilizer capacitor C9. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
6.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A8	Reconnect stabilizer capacitor C9. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	27KΩ	High side to pin 2 (grid) of picture tube. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A9	Adjust for minimum deflection.

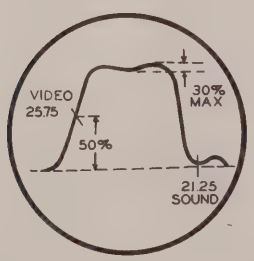


FIG.1

FIG.2

TV ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ALIGNMENT

Remove dummy converter tube and replace original 6J6 in its socket.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211. 25MC 215. 75MC	13	Vert. amp. to point (A). Low side to chassis.	A10	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should be at 50%
9.	"	"	207MC (10MC Swp)	205. 25MC 209. 75MC	12	"		Check for marker placement as shown in Fig. 4. Retouch A10 if necessary, to bring any individual channel within range of the fine tuning control then recheck all other high band channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199. 25MC 203. 75MC	11			
			195MC (10MC Swp)	193. 25MC 197. 75MC	10			
			189MC (10MC Swp)	187. 25MC 191. 75MC	9			
			183MC (10MC Swp)	181. 25MC 185. 75MC	8			
			177MC (10MC Swp)	175. 25MC 179. 75MC	7			
10.	"	"	85MC (10MC Swp)	83. 25MC 87. 75MC	6	"	A11	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should be at 50%.
11.	"	"	79MC (10MC Swp)	77. 25MC 81. 75MC	5	"		Check for marker placement as shown in Fig. 4. Retouch A11 if necessary to bring any individual channel within range of fine tuning control then recheck all other low band channels to see that they have not been seriously affected.
			69MC (10MC Swp)	67. 25MC 71. 75MC	4			
			63MC (10MC Swp)	61. 25MC 65. 75MC	3			
			57MC (10MC Swp)	55. 25MC 59. 75MC	2			

RF ALIGNMENT

The RF section of this tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

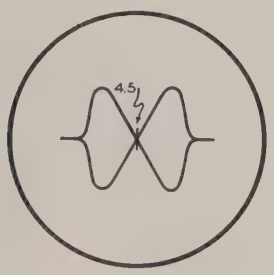


FIG. 3

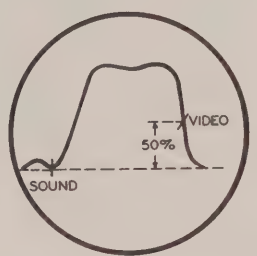


FIG. 4

RADIO ALIGNMENT INSTRUCTIONS

RADIO ALIGNMENT

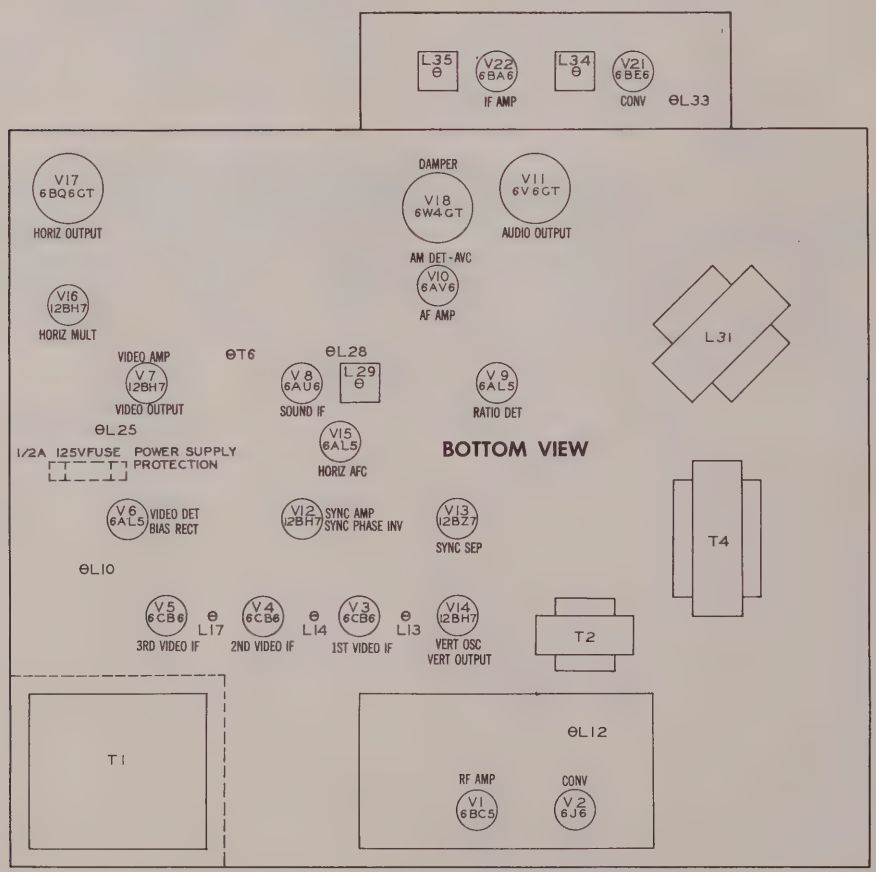
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
12.	.1MFD	High side to antenna stator lug on tuning gang. Low side to chassis.	455KC (400N Mod)	Radio	Tuning gang fully open	Across voice coil	A12, A13 A14, A15	Adjust for maximum deflection.
13.	"	"	1620KC	"	"	"	A16	"
14.		Loop	1400KC	"	Tone to 1400KC signal	"	A17	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

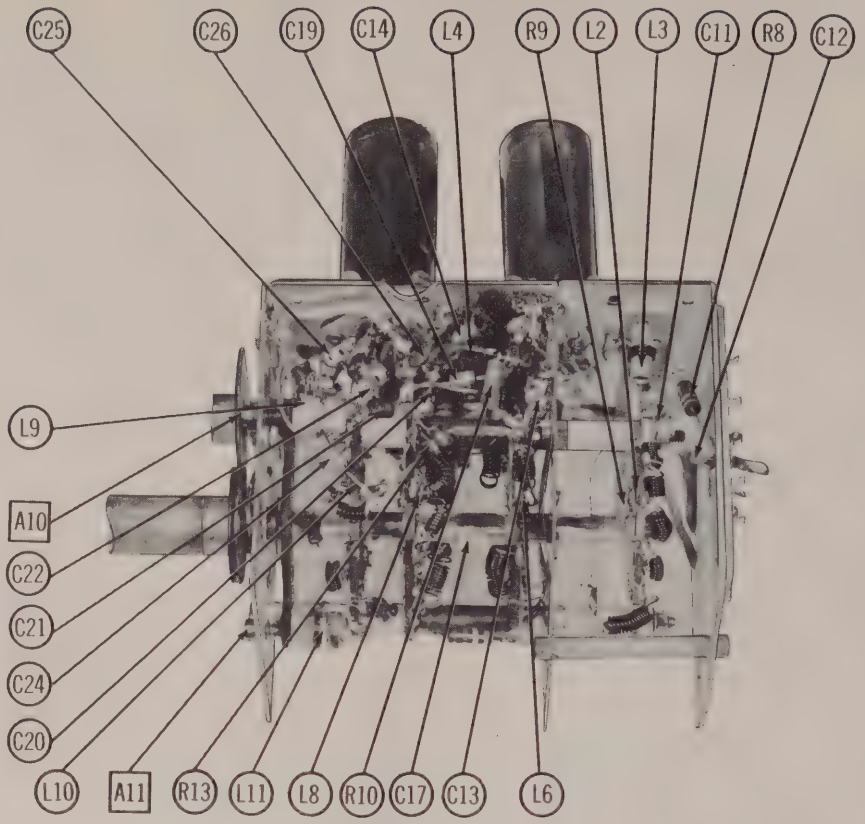
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	160KΩ	0Ω	0Ω	.1Ω	†2.9KΩ	†5.2KΩ	0Ω		
V 2	6J6	†13KΩ	†5.8KΩ	0Ω	.1Ω	220KΩ	15KΩ	0Ω		
V 3	6CB6	150KΩ	33Ω	.1Ω	0Ω	†2.4KΩ	†2.4KΩ	0Ω		
V 4	6CB6	160KΩ	47Ω	.1Ω	0Ω	†2.5KΩ	†2.5KΩ	0Ω		
V 5	6CB6	.2Ω	150Ω	.1Ω	0Ω	†2.5KΩ	†2.5KΩ	0Ω		
V 6	6AL5	2.5Ω	150KΩ	0Ω	.1Ω	INF	0Ω	42KΩ		
V 7	12BH7	†5.6KΩ	42KΩ	220Ω	.1Ω	.1Ω	†6.9KΩ	1Meg	1.3KΩ	0Ω
V 8	6AU6	100KΩ	0Ω	0Ω	.1Ω	†4.1KΩ	†105KΩ	0Ω		
V 9	6AL5	INF	INF	.1Ω	0Ω	0Ω	0Ω	47KΩ		
V 10	6AV6	10Meg	0Ω	.1Ω	0Ω	#370KΩ	0Ω	†470KΩ		
V 11	6V6GT	INF	0Ω	†3.3KΩ	†3.3KΩ	470KΩ	†1Meg	.1Ω	330Ω	
V 12	12BH7	†10KΩ	570KΩ	2.7KΩ	0Ω	0Ω	†70KΩ	27KΩ	0Ω	.1Ω
V 13	12BZ7	†10KΩ	2.2Meg	0Ω	0Ω	0Ω	†10KΩ	2.7Meg	0Ω	.1Ω
V 14	12BH7	▲7.6KΩ	1.5Meg	2.5KΩ	0Ω	0Ω	†2.5Meg	2.5Meg	0Ω	.1Ω
V 15	6AL5	3.4Meg	3.4Meg	0Ω	.1Ω	22KΩ	0Ω	22KΩ		
V 16	12BH7	†5.7KΩ	3.8Meg	1.8KΩ	.1Ω	.1Ω	†220KΩ	100KΩ	1.8KΩ	0Ω
V 17	6BQ6GT	470KΩ	0Ω	INF	†11.6KΩ	470KΩ	INF	.1Ω	220Ω	TOP CAP ▲100Ω
V 18	6W4GT	†62Ω	INF	1Meg	INF	†83Ω	INF	1Meg	1Meg	
V 19	1AX2	PINS 1 - 8 HAVE INF RESISTANCE								TOP CAP ▲440Ω
V 20	5U4G	INF	20KΩ	INF	40Ω	INF	35Ω	INF	20KΩ	
V 21	21FP4	0Ω	1Meg	PIN 6 †62Ω	PIN 10 ▲330KΩ	PIN 11 370KΩ	PIN 12 .1Ω			
V 22	6BE6	22KΩ	.7Ω	0Ω	#.1Ω	#†10KΩ	#†32KΩ	1.4Meg		
V 23	6AU6	1.4Meg	0Ω	0Ω	#.1Ω	#†10KΩ	#† 78KΩ	330Ω		

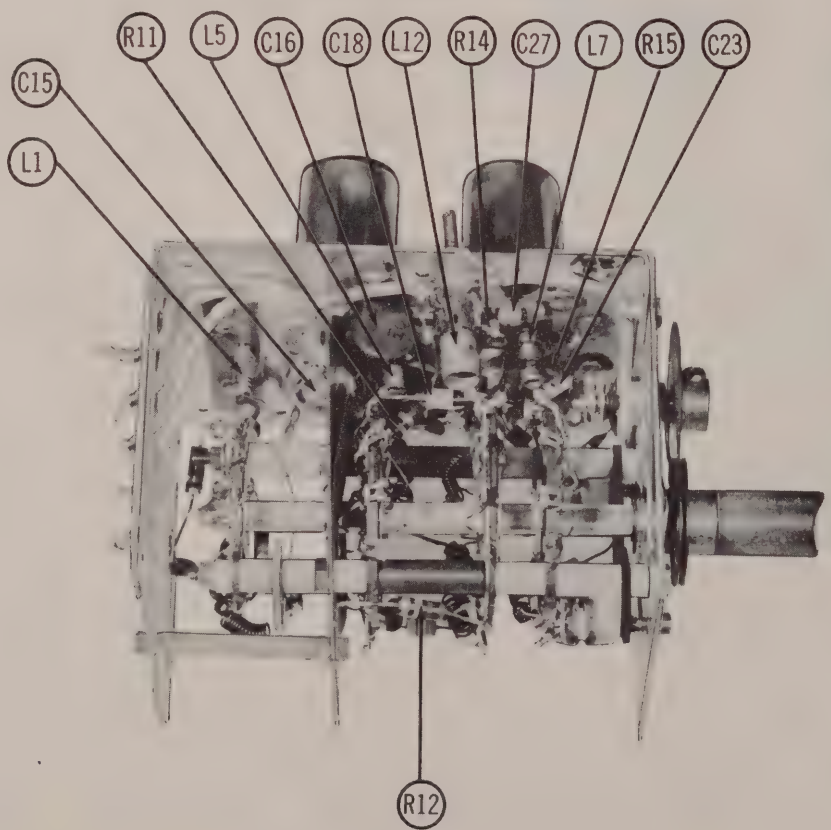
TAKEN IN RADIO POSITION
▲ MEASURED FROM PIN 3 OF V18
† MEASURED FROM PIN 8 OF V20



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

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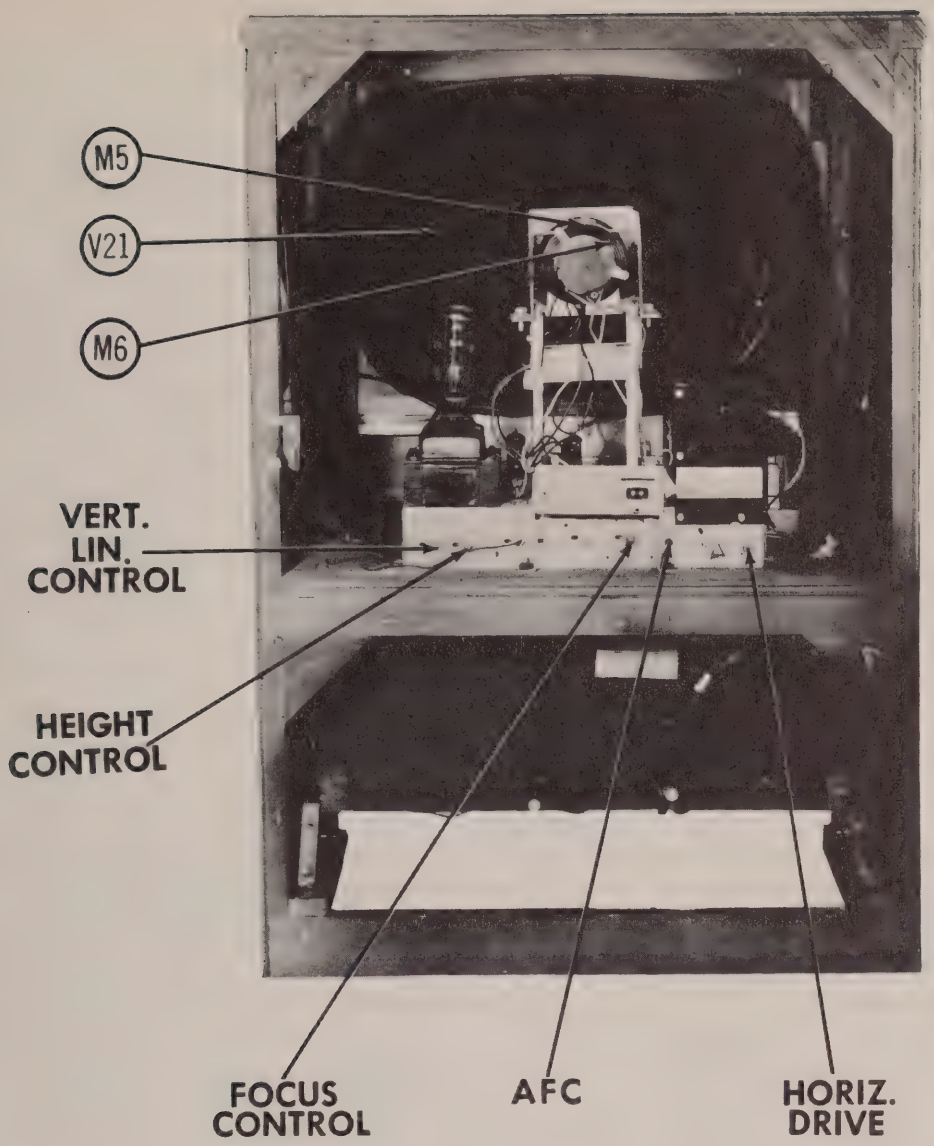

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control to the center of its range and adjust the horizontal AFC slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) in a counter clockwise direction as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See "Loss of High Voltage"

INSUFFICIENT SWEEP

Check by substitution V16, V17, V18 and V20. Check adjustments B2, B3 and B4. Check waveform W15.

If Satisfactory	If Unsatisfactory
Check T3, T5A, C86, C87, C89, C90 and other associated components	Check C82, C83, C84, C85, R95 R97, L30 and other associated components.

DRIVE LINES

Check by substitution V16, V17 and V18. Check adjustment B2. Check C84, C85, C89, C90, T3, T5A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V17 and V18. Check damper circuit components especially T3, T5A, C89 and C90.

FOLDS

Check by substitution V16, V17 and V18. Check components associated with these stages.

XMAS TREE EFFECT

Substitute V16. Check L30, C82, C83 and C84. Check other associated components.

VERTICAL

LOSS OF SWEEP

Substitute V14. Check waveform W9.

If Satisfactory	If Unsatisfactory
Check T4, T5B, R79, R80 and other associated components.	Check T2, R73, R74, R75, C73 and other associated components.

INSUFFICIENT SWEEP

Substitute V14. Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Substitute V14. Check T4, T5B, C2C and other associated components.

COMPRESSED AT TOP

Substitute V14. Check C73, R75 and other associated circuit components.

FOLDS

Substitute V14. Check associated circuit components for failure of change of value.

SYNC

LOSS OF HORIZONTAL AND VERTICAL SYNC

Check by substitution V12 and V13. Check components associated with these stages especially coupling capacitors and plate load resistors.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Substitute V14, V12 and V13. Check waveform W7.

If Satisfactory	If Unsatisfactory
Check components associated with V14.	Check vertical integrator network and other associated components.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V15 and V16. Check components associated with these stages especially C82, C83, C84 and C85.

HORIZONTAL BENDING OR S-ING

Check by substitution V15, V16 and V17. Check C80, C81, R90 and R91.

VERTICAL TRIGGERING

Substitute V12, V13 and V14. Check circuit near these stages for proper filament lead dress.

VIDEO

LOSS OF VIDEO

Check C48, R38 picture tube and associated components.

SOUND BARS (4.5MC BEAT)

Check local oscillator adjustment. Check adjustment A9. Check video IF alignment.

NEGATIVE PIX

Substitute V6 and V7. Check AGC for proper operation. Check picture tube.

POOR CONTRAST (STRONG SIGNAL AREAS)

Substitute V3, V4, V5, V6 and V7. Check associated circuit components for change of value or failure.

SMEAR

Check by substitution V6 and V7. Check C45, C48, R32, R33, R34, R36, R37, L23, L26 picture tube and other associated components for failure or change of value.

WIDE BLACK BAR ACROSS PIX

Check V1, V2, V3, V4, V5, V6 and V7 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V8, V9, V10 and V11. Check stages of V10 and V11 using audio signal generator. Apply signal across R46.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V10 and V11.

BUZZ

Adjust ratio detector secondary (A8) for minimum buzz. If buzz is still objectionable substitute V9 and realign audio section as outlined in the alignment section. Check C9.

DISTORTED

Check by substitution V8, V9, V10 and V11. Follow procedure outlined under "Weak or No Sound".

TV PARTS LIST & DESCRIPTION

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CBS-COLUMBIA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-Bias Rectifier	6AL5	6AL5	6BT	
V7	Video Amplifier-Video Output	12BH7	12BH7	9A	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector	6AL5	6AL5	6BT	
V10	AM Det.-AVC-AF Amp.	6AV6	6AV6	7BT	
V11	Audio Output	6V6GT	6V6GT	7S	
V12	Sync Amplifier-Sync Phase Inv.	12BH7	12BH7	9A	
V13	Sync Separator	12BZ7	12BZ7		
V14	Vert. Oscillator-Vert. Output	12BH7	12BH7	9A	
V15	Horiz. AFC	6AL5	6AL5	6BT	
V16	Horiz. Mult.	12BH7	12BH7	9A	
V17	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1AX2	1AX2	9Y	
V20	LV Rectifier	5U4G	5U4G	5T	
V22	AM Converter	6BE6	6BE6	7CH	
V23	AM IF Amplifier	6BA6	6BA6	7BK	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: CBS-Columbia PART No.	SYLVANIA PART No.	GENERAL ELECTRIC PART No.	RTMA BASE TYPE	NOTES
V21	21FP4A	21FP4A 21FP4①	21FP4A 21FP4①	12C 12C	① Circuit changes necessary

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: CBS-Columbia PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	450	PA-20144	PRS450/40-40		BBRD4445		FP447	TVA-2740	Red
B	40	450				BBRD2245			TVA-2730	Blue
C	20	450		PRS450/20-20						Green
D	20	450								Orange
C2A	10	450	PA-20175	AFH3-156		C112		4N727	TVA-2722	Red
B	10	450						TC2501	TVA-1310	Blue
C	100	50								Yellow-Note 1
C3	5	350	PA-20174	E26C219		BR435		TC60	TVA-1601	
C4	10	250	PA-20145							Note 2
C5	10	450								Notes 1, 2
C6	25	12	PA-20147-A	PRS25/25		BR252A		TC26	TVA-1205	
C7	10	25	PA-20137	PRS25/10		BR102A		TC22	TVA-1204	
C8	100	12	PA-20141-A	PRS12/100		BRH121		TC2501	TVA-1130	Note 3
C9	1	50	PA-20138	PRS150/4		BBR-1-50T		TC31	TVA-1300	
C10	1	50	PA-20138	PRS150/4		BBR-1-50T		TC31	TVA-1300	
C11	15			SII5	D6-150		GP1K-150	DC-5415	5GA-Q15	
C12	1500			BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C13	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C14	1500			BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C15	800			BPD-0008	DD-102	TM5T8	801-001	DC-521	5HK-D1	
C16	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C17	1.8									
C18	.6									
C19	1.8									
C20	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C21	1			SIINP0	TCZ-1		NP0K-010		5TCCB-V1	
C22	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C23	12			SI12NP0	TCZ-12		NP0K-120		5TCC-Q12	
C24	.6									
C25	4									
C26	800			BPD-0008	DD-102	TM5T8	801-001	DC-521	5HK-D1	
C27	15			SII5	D6-150		GP1K-150	UC-5415	5GA-Q15	
C28	270	500	PE190-133	1469-0003		5R5T3		MCB241	MS-33	
C29	5		PE555-100	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C30	82									
C31A	1500		PA19147	BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C32	680	500	PE556-234	1479-0007		5R5T7			MS-37	
C33	5000		PA19109	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C34	270	500	PE190-133	1469-0003		5R5T3		MCB241	MS-33	
C35	1500		PA19148	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C36	5000		PA19109	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C37	5000		PA19109	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C38	270	500	PE190-133	1469-0003		5R5T3		MCB241	MS-33	
C39	510	500	PE190-140	1468-0005	D6-501	5W5T5	GP2K-501	MC245	1FM-35	
C40A	4000			BPD-2X004	D6-402	TM5DD4	822-004	DCD-524	5HK-2D4	Note 4
B	4000				D6-402					
C41	22	500	PE190-107	1469-000025		5R5Q25		MCB220		
C42	5000		PA19109	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C43	10		PE555-101	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C44	1000		PE555-136	SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C45	.05	600	PE194-160	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C46	820		PP19201		D6-821		GP2K-821		5GA-T82	
C47	47	500		1469-00005		5R5Q5		MCB225	MS-45	
C48	.05	600	PE197-160	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C49	5		PE555-100	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C50	47	500		1469-00005		5R5Q5		MCB225	MS-45	
C51	47		PE555-113-2	SI47NP0	TCZ-47		NP0K-470	ZT-5447	5TCC-Q47	
C52	1500		PA19148	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C53	.005	600	PE194-151	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C54	1000		PE556-236	SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	

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TV PARTS LIST & DESCRIPTION (continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	CBS-Columbia PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C55	1500	600	PE556-338	SU500	D6-153	TMSD15	GPRL-153	UC-5315	5HK-D15	
C56	.05	600	PE194-160	P688-06	DF-503	PTE5S5		PT515	6TM-S5	
C57	.02	600	PE194-156	P688-02	DF-303	PTE5S3		PT513	6TM-S2	
C58	.05	600	PE194-160	P688-05	DF-503	PTE5S5		PT515	6TM-S5	
C59	.002	600	PE194-144	P688-002	D6-302	PTE5D2	GP2-333-202	PT5Z2	6TM-D3	
C60	.01	600	PE194-155	P688-01	D6-103	PTE5S1	GP2-333-103	PT511	6TM-S1	
C61	.005	600	PE194-151	P688-005	D6-502	PTE5D5	GP2-333-502	PT525	6TM-D5	
C62	.03	600	PE194-156	P688-02	DF-303	PTE5S3		PT513	6TM-S2	
C63	390	500	PE190-137	1469-0004		SR5T4		MCB343	MS-34	
C64	270	500	PE190-133	1469-0003		5R5T3		MCB341	MS-33	
C65	.01	600	PE194-155	P688-01	D6-103	PTE5S1	GP2-333-103	PT511	6TM-S1	
C66	.01	600	PE194-155	P688-01	D6-103	PTE5S1	GP2-333-103	PT511	6TM-S1	
C67	.005	600	PE194-151	P688-005	D6-502	PTE5D5	GP2-333-502	PT525	6TM-D5	
C68	.01	600	PE194-155	P688-01	D6-103	PTE5S1	GP2-333-103	PT511	6TM-S1	
C69	.005	600	PE194-151	P688-005	D6-502	PTE5D5	GP2-333-502	PT525	6TM-D5	
C70	4700	500	PE192-183	1464-005		1DR5D5		MCB465	MS-35	
C71	.035	600	PE194-159							
C72	.02	600	PE194-156	P688-02		PTE5S3		PT513	6TM-S2	
C73	.05	600	PE194-160	P688-05	DF-503	PTE5S5		PT515	6TM-S5	
C74	.05	600	PE194-160	P688-05	DF-503	PTE5S5		PT515	6TM-S5	Note 5
C75	.05	600	PE194-160	P688-05	DF-503	PTE5S5		PT515	6TM-S5	
C76	.05	600	PE194-160	P688-05	DF-503	PTE5S5		PT515	6TM-S5	
C77	.001	600	PE194-145	P688-001	D6-102	PTE5D1	GP2L-102	PT5Z1	6TM-D1	
C78	.001	600	PE194-145	P688-001	D6-102	PTE5D1	GP2L-102	PT5Z1	6TM-D1	
C79	.005	600	PE197-151	P688-005	D6-502	PTE5D5	GP2-333-502	PT525	6TM-D5	
C80	.0047	600	PE197-151	P688-0047	D6-472	PTE5D47	GP2-333-472	PT5Z47	6TM-D47	
C81	.05	600	PE194-160	P688-05	DF-503	PTE5S5		PT515	6TM-S5	
C82	3900	500	PE195-281	1464-004		LDR5D4		MCB463	MS-34	
C83	390	500	PE190-137	1469-0004		5R5T4		MCB343	MS-34	
C84	390	500	PE190-127	1469-0004		5R5T4		MCB343	MS-34	
C85	270	500	PE190-133	1469-0003		5R5T3		MCB341	MS-33	
C86	5	2500	PP1845					MCP550	30GA-V47	
C87	10	2500	PP1946	HVD30-00001		TM50Q1		MCP410	30GA-Q1	
C88	.05	600	PE197-160	P688-05	DF-503	PTE5S5		PT515	6TM-S5	
C89	.1	600	PE197-163	P688-1		PT5Q1		PT5Q1	6TM-P1	
C90	.047	600	PE197-160	P688-047		PTE5S47		PT5147	6TM-S47	
C91	500	20000	PA1898-3	HV30C	TV3-502	MM-C20T5	413-501	HV20035A	20DK-T5	
C92	10	1500		HVD15-00001		TM50Q1		MCP410	20GA-Q1	Note 6
C93	22	1500		HVD15-000022				MCM422	20GA-Q22	Note 2
C94	5000		PA19109	BPD-005	MD-502	TM5D5	811-006	DC-525	5HK-D5	
C95	.1	600	PE194-124	P688-1	DF-104	PTE5P1		PT591	6TM-P1	
C96	56	500								
C97	.01	600		689ZX-01		PT681		PT611	6TM-S1	Note 2
C98	.01	600		689ZX-01		PT681		PT611	6TM-S1	Note 2

Note 1. In some Models C5 is part of C3 and C3C is a separate unit (part #PA20130)
Note 2. Not used in all Models.
Note 3. Some Models use 10MFD in this application (part #PA20137).
Note 4. Some Models use dual 5000MMF in this application (part #PP19163)
Note 5. Some Models use .01MFD in this application (part #PE194-155)
Note 6. Some Models use 220MMF in this application (part #PP19180)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING	CBS-Columbia PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5000Ω	2	PB-24142		RTV-361		WF53	Contrast-Panel
B	250KΩ	1	Not Req.				UR254A	Volume -Rear
C	Switch		Not Req.				US-28	Attach to R1B
R2A	100KΩ	1	PA-24110-D	QU-128	AG-49-S	AB-40	SU-41	Brightness
B	Shaft		Not Req.	Not Req.	RS-3	AK-9	Not Req.	Attach to R2A
R3A	5000Ω	1	PA-24141-B	QU-114	AG-19-S	AB-10	SU-14	Horiz. Hold
B	Shaft		Not Req.	Not Req.	RS-3	AK-1	Not Req.	Attach to R3A
R4A	1Meg	1	PA-24112-C	QU-137	AG-61-S	AB-69	SU-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	RS-3	AK-1	Not Req.	Attach to R4A
R5A	1Meg	1	PA-24112-C	QU-137	AG-61-S	AB-69	SU-54	Focus
B	Shaft		Not Req.	Not Req.	RS-3	AK-1	Not Req.	Attach to R5A
R6A	5 Meg	1	PA-24111-D	QU-141	AG-85-S	AB-87	SU-67	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	3000Ω	1	PA-24114-B	QU-112	AG-15-S	AB-8	U-8	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	CBS-Columbia PART No.	IRC PART No.	NOTES
R8	15KΩ	1		BTS-15K	
R9	2.2KΩ	1		BTS-2200	
R10	2.2KΩ	1		BTS-2200	
R11	470Ω	1		BTS-470	
R12	220KΩ	1		BTS-220K	
R13	100KΩ	1		BTS-100K	
R14	3.3KΩ	1		BTS-3300	
R15	15KΩ	1		BTS-15K	
R16	3900Ω	1	PE231-1163	BTS-3900	
R17	33Ω	1	PE231-1113	BTS-33	
R18	330Ω	1	PE231-1137	BTS-330	
R19	82Ω	1	PE231-1123	BTS-82	
R20	18KΩ	1		BTS-18K	
R21	47Ω	1	PE231-1117	BTS-47	
R22	5600Ω	1		BTS-5600	
R23	220Ω	1	PE231-1133	BTS-220	
R24	150Ω	1	PE231-1129	BTS-150	
R25	220Ω	1	PE231-1133	BTS-220	
R26	100KΩ	1	PE231-1197	BTS-100K	
R27	1.5KΩ	1	PE231-1177	BTS-15K	
R28	4700Ω	1	PE231-1165	BTS-4700	
R29	4700Ω	1	PE231-1165	BTS-4700	
R30	220Ω	1	PE231-1133	BTS-220	
R31	4700Ω	1	PE231-1165	BTS-4700	
R32	3300Ω	1	PE232-1161	BTA-3300	
R33	1Meg	1	PE231-1221	BTS-1Meg	
R34	180Ω	1	PE231-1131	BTS-180	
R35	10KΩ	1	PE231-1173	BTS-10K	
R36	11KΩ	5% 2	PE233-74	BTB-11K	5%
R37	18KΩ	2	PE233-1179	BTB-18K	
R38	1Meg	1	PE231-1221	BTS-1Meg	
R39	270KΩ	1	PE231-1207	BTS-270K	
R40	100KΩ	1	PE231-1197	BTS-100K	
R41	100KΩ	1	PE231-1197	BTS-100K	
R42	1800Ω	1	PE231-1155	BTS-1800	
R43	39KΩ	1	PE231-1187	BTS-39K	
R44	47KΩ	1	PE231-1189	BTS-47K	
R45	820KΩ	1	PE231-1219	BTS-820K	
R46	10Meg	1	PE231-1245	BTS-10Meg	
R47	470KΩ	1	PE231-1213	BTS-470K	
R48	470KΩ	1	PE231-1213	BTS-470K	
R49	330Ω	1	PE232-1137	BTA-330	
R50	1Meg	1	PE231-1221	BTS-1Meg	
R51	3250Ω		PC21134-4		
R52	27KΩ	1	PE231-1183	BTS-27K	
R53	12KΩ	1	PE231-1175	BTS-12K	
R54	68KΩ	1	PE231-1193	BTS-68K	
R55	470KΩ	1	PE231-1213	BTS-470K	
R56	2.2Meg	1	PE231-1229	BTS-2.2Meg	
R57	2.2Meg	1	PE231-1229	BTS-2.2Meg	
R58	22KΩ	1	PE232-1181	BTA-22K	
R59	8200Ω	1	PE231-1171	BTS-8200	
R60	1Meg	1	PE231-1221	BTS-1Meg	
R61	22KΩ	1	PE231-1181	BTS-22K	

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	CBS-Columbia PART No.	IRC PART No.	NOTES
R63	1Meg	1	PE231-1221	BTS-1Meg	
R63	2700Ω	1	PE231-1159	BTS-2700	NOTE 1
R64	3900Ω	1	PE231-1163	BTS-3900	
R65	3900Ω	1	PE231-1163	BTS-3900	
R66	5600Ω	1	PE231-1207	BTS-5600	
R67	22KΩ	1	PE231-1181	BTS-22K	
R68	22KΩ	1	PE231-1181	BTS-22K	
R69	8200Ω	1	PE231-1171	BTS-8200	
R70	47KΩ	2	PE231-1189	BTS-47K	
R71	1.8Meg 5%	1	PE232-127	BTA-1.8Meg 5%	
R72	6800Ω	1	PE231-1169	BTS-6800	
R73	470KΩ	1	PE231-1213	BTS-470K	
R74	47KΩ	1	PE231-1189	BTS-47K	
R75	1.5Meg	1	PE231-1225	BTS-1.5Meg	
R76	1800Ω	1	PE231-1155	BTS-1800	NOTE 4
R77	47KΩ	1	PE232-1189	BTA-47K	NOTE 2
R78	150KΩ	1	PE232-1201	BTA-150K	NOTE 2
R79	3300Ω	3	PE233-1161	BTB-3300	
R80	3300Ω	3	PE233-1161	BTB-3300	
R81	330KΩ	1		BTA-330K	NOTE 3
R82	560Ω			BTS-560	
R83	560Ω			BTS-560	
R84	33KΩ	1	PE231-1185	BTS-33K	
R85	10KΩ	10	PC2114-25	1 3/4-10K	NOTE 5
R86	2250Ω	15	PC2114-16	2D-2250	
R87	100KΩ	1	PE231-1197	BTS-100K	

ITEM No.	RATING OHMS	RATING WATT	CBS-Columbia PART No.	IRC PART No.	NOTES
R88	100KΩ	1	PE231-1197	BTS-100K	
R89	22KΩ	1	PE232-1181	BTA-22K	
R90	3.3Meg	1	PE231-1233	BTS-3.3Meg	
R91	470KΩ	1	PE231-1213	BTS-470K	
R92	5600Ω	1	PE231-1167	BTS-5600	
R93	1800Ω	1	PE231-1155	BTS-1800	
R94	100KΩ	1	PE-231-1197	BTS-100K	
R95	220KΩ	1	PE231-1205	BTS-220K	
R96	82Ω	1	PE231-1123	BTS-82	
R97	470KΩ	1	PE231-1213	BTS-470K	
R98	220Ω	2	PE233-1133		
R99	6800Ω	2	PE233-1169	BTB-6800	
R100	4700Ω	2	PE233-1165	BTB-4700	
R101	47Ω	1	PE231-1117	BTS-47	
R102	4700Ω	2	PE233-1165	BTB-4700	
R103	.5Ω	3	PE233-2221	BTB-1Meg	NOTE 2
R104	1Meg	2		BTA-680K	
R105	680KΩ	1		BTA-680K	
R106	680KΩ	1		BTA-680K	
R107	15KΩ	1	PE232-1177	BTA-15K	NOTE 2
R108	220KΩ	1		BTA-220K	
R109	60Ω	10	PC21134-2		
R110	4.7Ω	1	PP23151		
R111	1.5Ω	2	PE23151		

NOTE 1. Some models may use a 27KΩ resistor in this application.
NOTE 2. Not used in all models.
NOTE 3. Some models may use a 2.2Meg resistor in this application.
NOTE 4. Some models may use a .56Ω resistor in this application.
NOTE 5. Some models may use a 8800Ω 2 watt resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	CBS-Columbia PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC ⑨1.8A	680VCT .220A	5VAC ⑨3A	6.3VAC ⑨1.2A SEC. 4 6.3VAC ⑨8.1A	PC10109 A10109 ①		P-3089		B-49BB	

① Alternate power transformer.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	CBS-Columbia PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	185Ω	985Ω	A-10106-1 A-10108 ①	A-8125	A-3003	TBO-5	A-97X	209T1 ⑩	Vert.Osc. Trans.
T3	410Ω tap 2 ⑨75Ω	2Ω tap ⑨ 14Ω SEC. 2 3Ω SEC. 3 .5Ω SEC. 4 0Ω	A-10136B-CM A-10136 ② A-10137 ③	A-8130 & WC-5 ④⑤	HVO-10 ⑩	TFB-19	D-15 ⑤⑦		Horiz.Output Trans.
T4	1740Ω	6Ω	A-10152-1 A-10152-1A ⑤	A-8141 ⑩	A-3039 ⑩	TSO-12 ⑩	A-104X ⑩	226T1 ⑩	Vert.Output Trans.
T5A	1Ω		A-28330	DY-8A ⑪ ⑫	MDF-70 ⑪ ⑫	TY-2 ⑪ ⑫	Y-12 ⑪	206D1 ⑪ ⑫	Horiz.Deflection Coils
B	56Ω		A-28331 ⑯						Vert. Deflection Coils
T6	30Ω		A-28292E A-28292 ⑭	WC-5 ⑭	MWC-14 ⑭ ⑯	TWL-1	WC-11 ⑭ ⑯	215R1	Horiz.Linearity Coil
T7	2.2Ω		A-28318-A A-28318-1 ⑰	WC-2 ⑰	MWC-2 ⑰	TW-5		206R1	Width Coil

① Alternate vertical oscillator transformer.
② Alternate horiz. output transformer.
③ Drill new mounting holes.
④ See instruction sheet packed with unit for terminal connections.
⑤ Short out or remove original width coil and damping resistor
⑥ Connect original terminal #9 to new terminal #3., original #3 to new #1, original #4 to new #4, original #8 to new #5, original #1 to new #6, original #6 to new #2.
⑦ Connect original terminal #9 to new terminal #7, original #2 to new #8, original #4 and #7 to new #4, original #8 to new #5, original #1 to new #6, original #6 to new #2.
⑧ Alternate vertical output transformer.
⑨ Connect blue lead of transformer to plate, connect green lead of transformer and boosted B+ to brown lead of yoke. Remove green lead of yoke from its present terminal & connect to red lead of transformer.
⑩ Yoke cover and positioning device
⑪ Use original yoke cover and positioning device.
⑫ Use original horizontal deflection coil network if necessary.
⑭ Use original deflection coil network.
⑮ Alternate horizontal linearity coil
⑯ Connect to coded blue and red terminals.
⑰ Enlarge mounting hole.
⑱ Alternate width coil.
⑲ Use tap if necessary.
⑳ Enlarge mounting hole if necessary.
㉑ Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	CBS-Columbia PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T8	5.1KΩ	3.3Ω	350Ω	.35Ω	Part of Spkr.	A-3877①	A-2930 ①	RO-9 ①	S-3X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V C IMP.	CBS-Columbia PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	10"	PM	3.3Ω	PC58121-3 PC58121 ①	10J11	10A31	① Alternate 10" PM speaker

COILS (RF-IF)

ITEM No.	USE	DC RES PRI.	DC RES SEC.	CBS-Columbia PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Trans.	0Ω CT	0Ω					Low Channel secondary-0Ω
L2	Ant. Coils	0Ω						Channel 13
L3	Ant. Coil	0						
L4	Fil. Choke	0Ω						Channel 13
L5	RF Coil	0Ω						
L6	RF Coils	0Ω						
L7	Mixer Grid Coil	0Ω						Channel 13
L8	Mixer Grid Coils	0Ω						
L9	Osc.Plate Coil	0Ω CT						Channel 13
L10	Osc. Coils	0Ω						Channel 6 Tapped ⑨.3Ω
L11	Osc. Coil	0Ω						
L12	1st. Video IF	.5Ω						
L13	21.25MC Trap	0Ω		A-28314	20-1021	TV-122 †	6171 †	
L14	2nd.Video IF	.2Ω		A-3392	17-1003 †	TV-102 †	6188 †	
L15	Fil. Choke	.27Ω		A-28276	19-3001	TV-189	6175	.82 Microhenry (IRC part #CL-U)
L16	RF Choke	3.5Ω		A-28253	19-3036	TV-180	6176	35 Microhenries
L17	3rd.Video IF	.3Ω		A-3392	17-1004 †	TV-103 †	6189 †	
L18	Fil. Choke	.27Ω		A-28276	19-3001	TV-189	6175	.82 Microhenry (IRC part #CL-U)
L19	4th.Video IF	.2Ω		A-3392	17-1003 †	TV-102 †	6188 †	
L20	RF Choke	2.5Ω		A-28253	19-3036	TV-180	6176	35 Microhenries
L21	Series Peaking Coil	9Ω		A-28255-2	19-3180	TV-184	6154	194 Microhenries
L22	Shunt Peaking Coil	7Ω		A-28256-1	19-3125	TV-181	6153	130 Microhenries
L23	Series Peaking Coil	9Ω		A-28255-2	19-3180	TV-184	6154	194 Microhenries
L24	Shunt Peaking Coil	7Ω		A-28255-1	19-3125	TV-181	6153	130 Microhenries
L25	4.5MC Trap	1.8Ω		A-28286	20-1004	TV-151	1470	
L26	Series Peaking Coil	4.8Ω		A-28255-1	19-3125	TV-181	6153	130 Microhenries
L27	Shunt Peaking Coil	14Ω		A-28255-4	19-3300		6155	314 Microhenries
L28	Sound IF	1.8Ω		A-28286	17-1400	TV-151	1469	
L29	Ratio Det.	5.5Ω	1.8ΩCT	A-1201 *	17-1497	TV-125	6205	Tertiary winding-.6Ω
L30	Horiz.Osc.	60Ω		A-28263	19-1576	TV-163	6210	

* Alternate part #A-1202
† Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 ∿)	CBS-Columbia PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L31	.220ADC	62.5Ω	1.74 Hy.	PB-1406	C-2325 ①	C-2991 ①	TR-1733 ①	C-21X ①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	CBS-Columbia PART No. FUSE	CBS-Columbia PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	¼A. 125V			3150020 (3AG S/B-¼A)		MDV-2	

MISCELLANEOUS

ITEM No.	PART NAME	CBS-Columbia PART No.	NOTES
M2	Dial Light		#47
M3	Tuner		VHF
M4	Switch	A-37115	Rotary function selector
M5	Centering Magnet	PB-25331A	
M6	Ion Trap	A-3206	
B2	Trimmer Cap.	PA-1772	Horiz. Drive 25-280MMF
	Cabinet	PE-50194	
	Knob	PA-39266	TV-AM Radio-Phono
	Knob	PC-39241-1	Off/On Volume
	Knob	PC-39242-1	Channel Selector
	Knob	PC-39248-1	Contrast & Radio Dial
	Knob	PC-39285	Vernier & dial assembly
	Safety Glass	PC-62457-13	
	Mask	PC-62424	
	Back Cover	PC-62431	

RADIO PARTS LIST & DESCRIPTION

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		CBS-Columbia PART No.	STANDARD REPLACEMENT		
V22	AM Converter	6BE6	6BE6	7CH	
V23	IF Amplifier	6BA6	6BA6	7BK	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CBS-Columbia PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C99	22	500		1469-000025		5R5Q25				Note
C100	.1	200	PE196-66	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C101	10000		PB19210-6	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C102	10000		PB19210-6	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C103	220		PE556-123	SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	

Note - Not used in all Models.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CBS-Columbia PART No.	IRC PART No.	
R112	22KΩ	½		BTS-22K	
R113	22KΩ	1		BTA-22K	
R114	330Ω	½		BTS-330	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CBS-Columbia PART No.	IRC PART No.	
R115	68KΩ	½		BTS-68K	
R116	1Meg	½		BTS-1Meg	
R117	120KΩ	½		BTS-120K	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CBS-Columbia PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L32	Loop Ant.	2.7Ω		PB-28345				
L33	Osc. Coil	.7Ω	8Ω	PB-28344-1	14-1073		69-Osc.	
L34	Input IF	18Ω	18Ω	PB-33102A	16-6758	BC-352	12-C1	
L35	Output IF	18Ω	18Ω	PB-33102A	16-6758	BC-353	12-C2	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	CBS-Columbia PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M7		LT-4-AG	D-AG	W66B	A66U	33	0-2	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

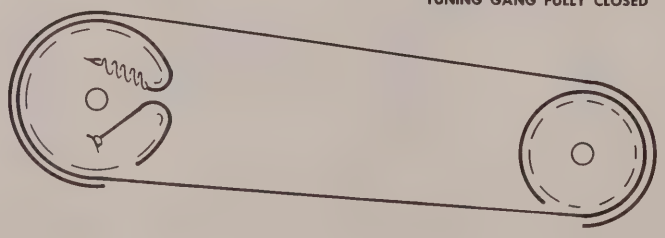
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	CBS-Columbia PART No.	WALCO PART No.	JENSEN PART No.	
M8		W-GAGA or W-GAGS	A-832 or A-732	

MISCELLANEOUS

ITEM No.	PART NAME	CBS-Columbia PART No.	NOTES
M9	Tuning Cap.	PB-16114	(39-467MMF, 17-180MMF)

TUNING GANG FULLY CLOSED



DIAL CORD STRINGING

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. [illegible] SCHOOLSHIP
[illegible] MEADE ST
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly, switch on volume control and T1. If filaments light, substitute V20 and check M1, B+ filter and decoupling components.

SMALL AND/OR DIM PIX

Substitute V20. Check B+ filter and decoupling network and components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V16, V17, V18, and V19. Check waveform W15.

If Satisfactory	If Unsatisfactory
Check R103, R104, C91, T3, T5A and other associated components.	Check C83, C84, C85 and other associated components

INSUFFICIENT HIGH VOLTAGE

Check by substitution V16, V17, V18, V19 and V20. Check picture tube. Proceed as outlined under "Loss of High Voltage."

BLOOMING

Check by substitution V19, V18, V17, V16 and V20. Check T3, T5A, R103, R104, C91 and other associated components.

GENERAL

RASTER SOUND NO PIX

See "Loss of Video".

RASTER NO SOUND NO PIX

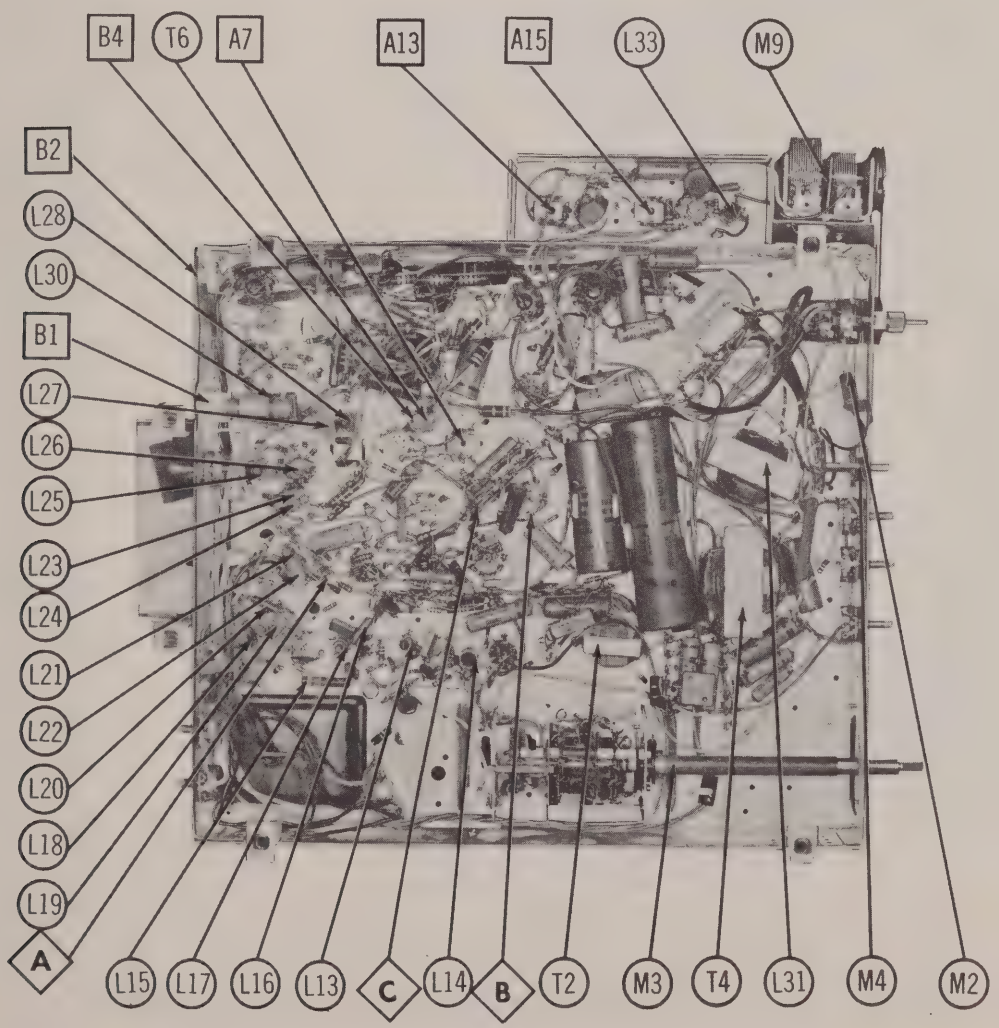
Check by substitution V1, V2, V3, V4, V5, V6, and V7. Check associated components.

NO RASTER NO SOUND

See "Dead Set".

INTERMITTENT STREAKS

Check signal at W1 for interference pulses. Check high voltage section for corona discharge and arcing.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 5 wood screws holding strip at the top of safety glass. Remove strip and safety glass by tilting forward and lifting out of slot at the bottom. (Use extreme caution when removing safety glass).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal AFC slug (L30) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L29) located on top of chassis. (See tube placement chart).

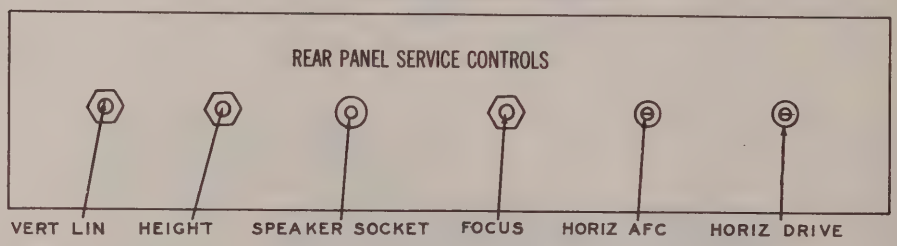
FUSES

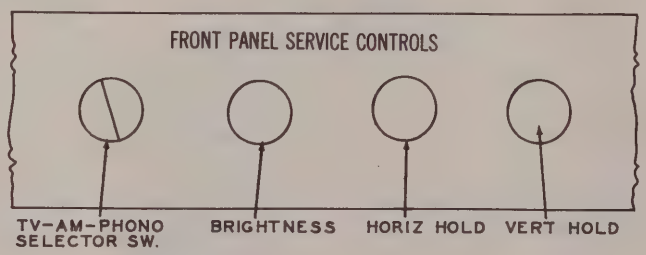
One fuse is used for power supply protection. (See tube placement chart for location).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

SERVICE ADJUSTMENT LOCATION





DISASSEMBLY INSTRUCTIONS

Remove 5 push on type control knobs from front panel.

Remove 11 wood and 1 metal screws. Remove rear cover.

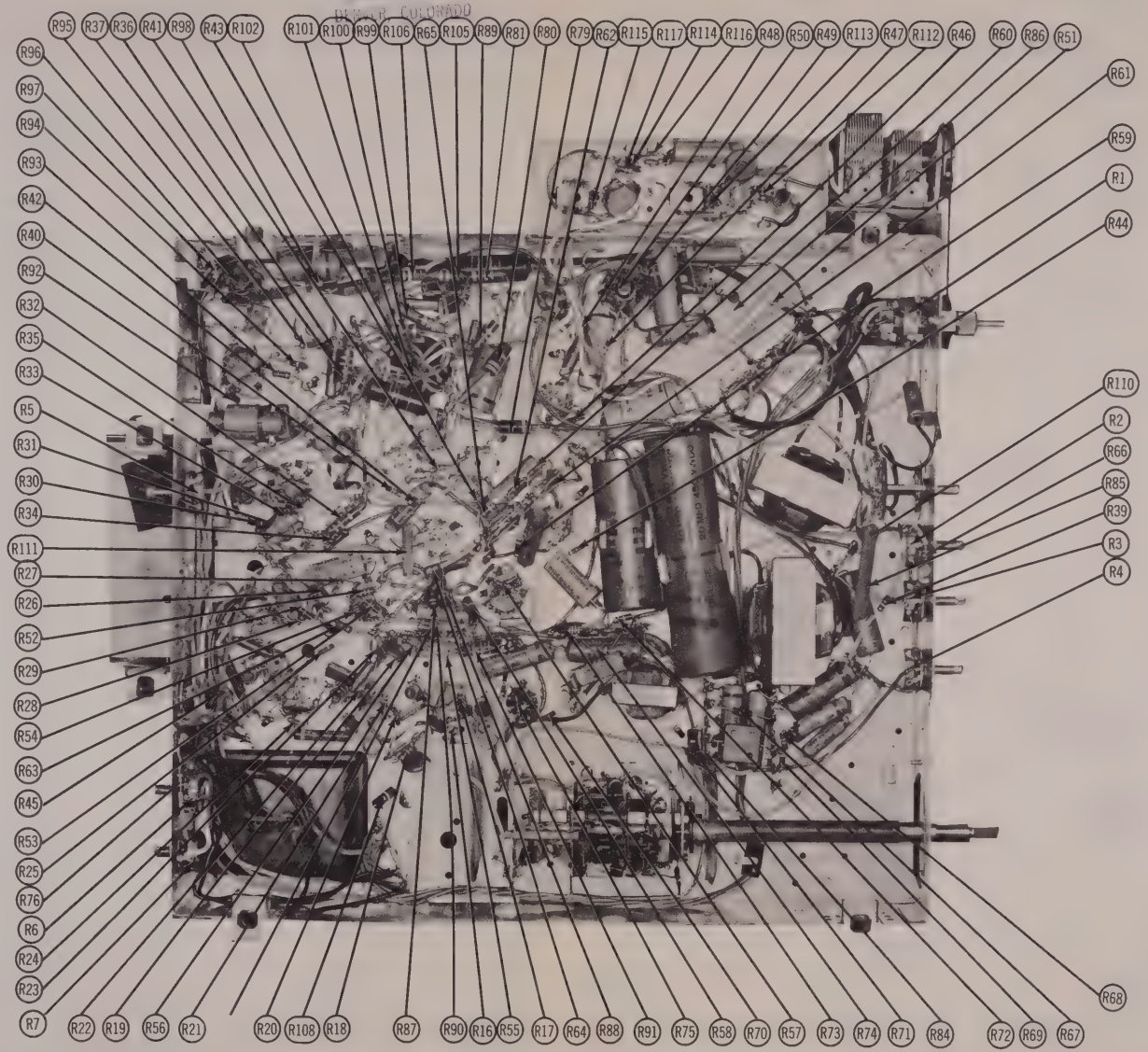
Disconnect built-in antenna, speaker lead, phono audio plug and phono motor plug.

Remove 2 wood screws. Remove antenna bracket.

Remove 6 chassis bolts. Remove chassis.

Remove 5 wood screws. Remove speaker cover (in phono section).

Remove 4 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
DENVER, COLORADO

CORONADO
MODEL 35RA37-43-8355

CORONADO
MODEL 35RA37-43-8355

TRADE NAME	Coronado Model 35RA37-43-8355
SUPPLIER	Gamble-Skogmo, Inc., 15 N. 8th. St., Minneapolis, Minn.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Six)	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC — RATING .22 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1640KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
With tuning gang fully closed set pointer just to the left of "55" on the dial scale.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1640KC	"	"	A5	Adjust for maximum deflection. If range of A5 is insufficient set A5 near its mid-range capacity and adjust trimmer at opposite side of stator plates.
3.		Loop	1400KC	Tune to 1400KC signal	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.	Repeat Steps 2 and 3.						

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PARTS LIST AND DESCRIPTIONS

CORONADO
MODEL 35RA37-43-8355

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V5	Audio Output	35C5	35C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	30	150	520598	PRS150/50-30		EDL-5315		TCD497	TVA-2450	Red
B	50	150								Black
C2	.02	400	512016	P488-02		PTE4S2		PT412	4TM-S2	
C3										Note 1
C4	15			SI15NP0	TCN-15				5TCC-Q15	
C5	100	500	512503	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C6	.02	400	512016	P488-02		PTE4S2		PT412	4TM-S2	
C7	100	500	512503	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C8	100	500	512503	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C9	.002	600	512002	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C10	.002	600	512002	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C11A	5000		*505858	*PA-112-1	*PC-70		*1406-01		*104C4	
B	250									
C										
C12	.005	600	512006	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C13	.05	600	512030	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C14	.15	400	512040	P488-15		PTE4P15		PT4015	4TM-P15	

Note 1. Some Models use a single 22MMF capacitor in this application.
* Items C11A, C11B, C11C, R9A and R9B are combined in one unit.
Items C11B & C11C when being replaced separately should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1.5Meg	½	520876	Q11-138	AG-83-S	AB-697	U-155	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	1Meg	½	521075	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R2A

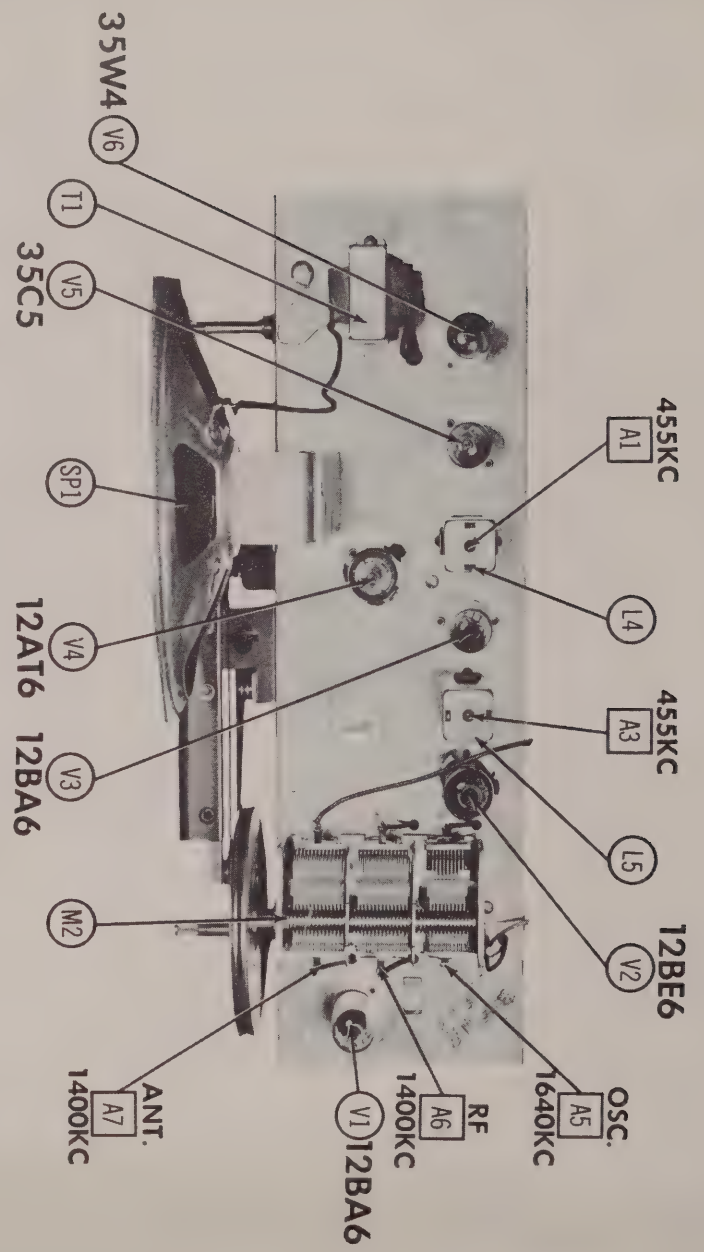
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CORONADO PART No.	IRC PART No.	
R3	220Ω	½	510125	BTS-220	
R4	22KΩ	½	510161	BTS-22K	
R5	150Ω	½	510121	BTS-150	
R6	1Meg	½		BTS-1Meg	Note
R7	33KΩ	½	510164	BTS-33K	
R8	1Meg	½	510191	BTS-1Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CORONADO PART No.	IRC PART No.	
R9A	500KΩ	½			
B	500KΩ	½	♦505858		
R10	150Ω	½	510121	BTS-150	
R11	1000Ω	1	510237	BTS-1000	
R12	33Ω	1	510210		
R13	220KΩ	½	510179	BTS-220K	
R14	10Meg	½	510197	BTS-10Meg	

Note : Not used in all Models.
♦ Items R9A, R9B, C11A, C11B, C11C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.6KΩ	3Ω	230Ω tap ⓐ 10Ω	.52Ω	521117	A-3330 ①	A-3031	RO-3 ①		① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CORONADO PART No.	VIKING PART No.	QUAM PART No.	
SP1	4 x 6"	PM	3Ω	521072	46J6	46A1	

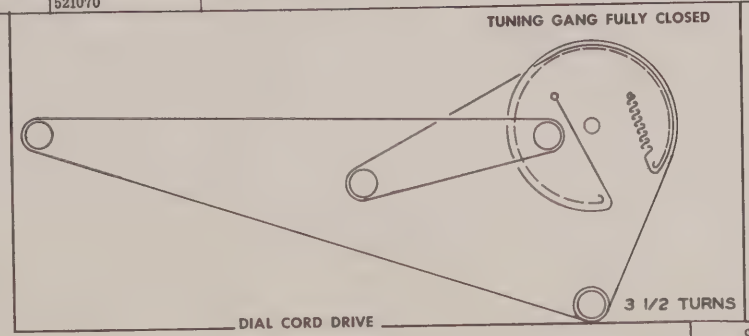
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	0Ω	2Ω	521077				
L2	RF Coil	100Ω	5.5Ω	521396	14-1072	BC-382 *	70-RF	
L3	Osc. Coil	.3Ω	2.8Ω	506094	14-1074		70-Osc †	
L4	Input IF	21Ω	21Ω	505867	16-6758	BC-352	12-C1	
L5	Output IF	21Ω	21Ω	505867	16-6758	BC-353	12-C2	
L6	Line Isolation	.22Ω			19-3001	TV-189	6175	.47 Microhenry, (IRC part #CLA)

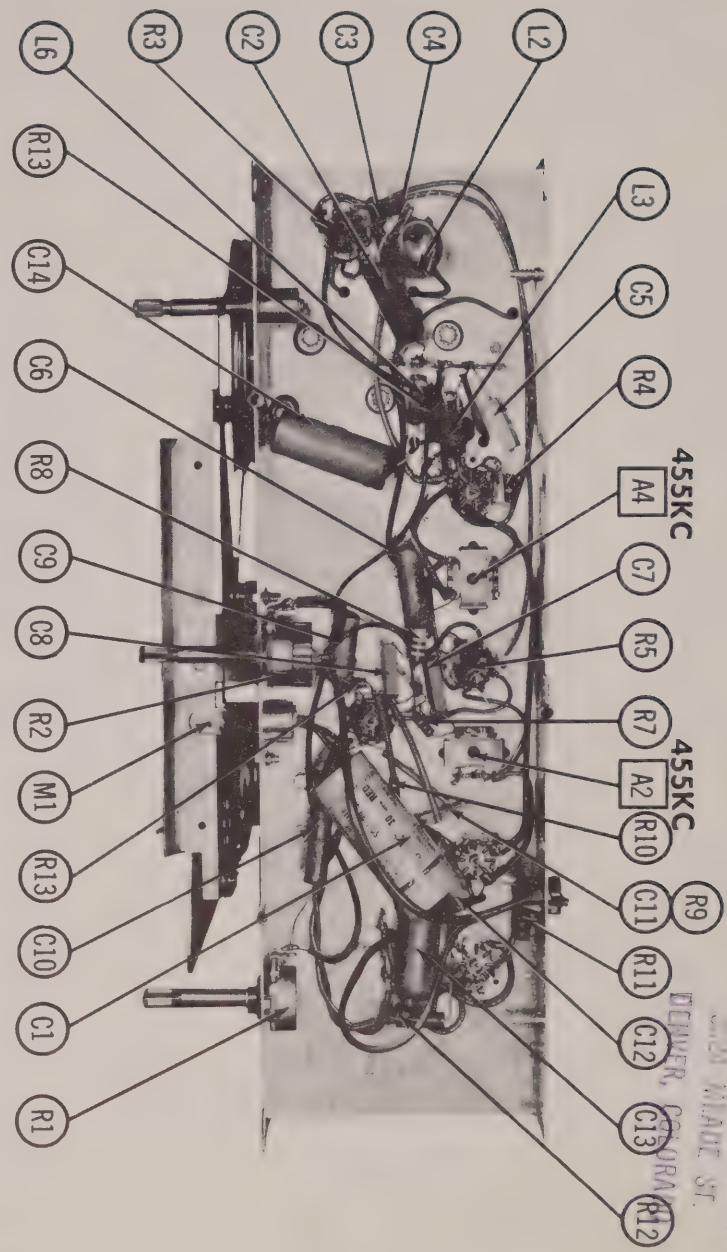
* Drill mounting hole.
† Disregard tap on secondary winding.

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M1	Dial Light	118921	#47
M2	Tuning Cap.	521076	(42-442MMF, 42-442MMF, 29-185MMF)
	Cabinet	521114	Includes dial scale.
	Knob	521070	



CHASSIS—BOTTOM VIEW



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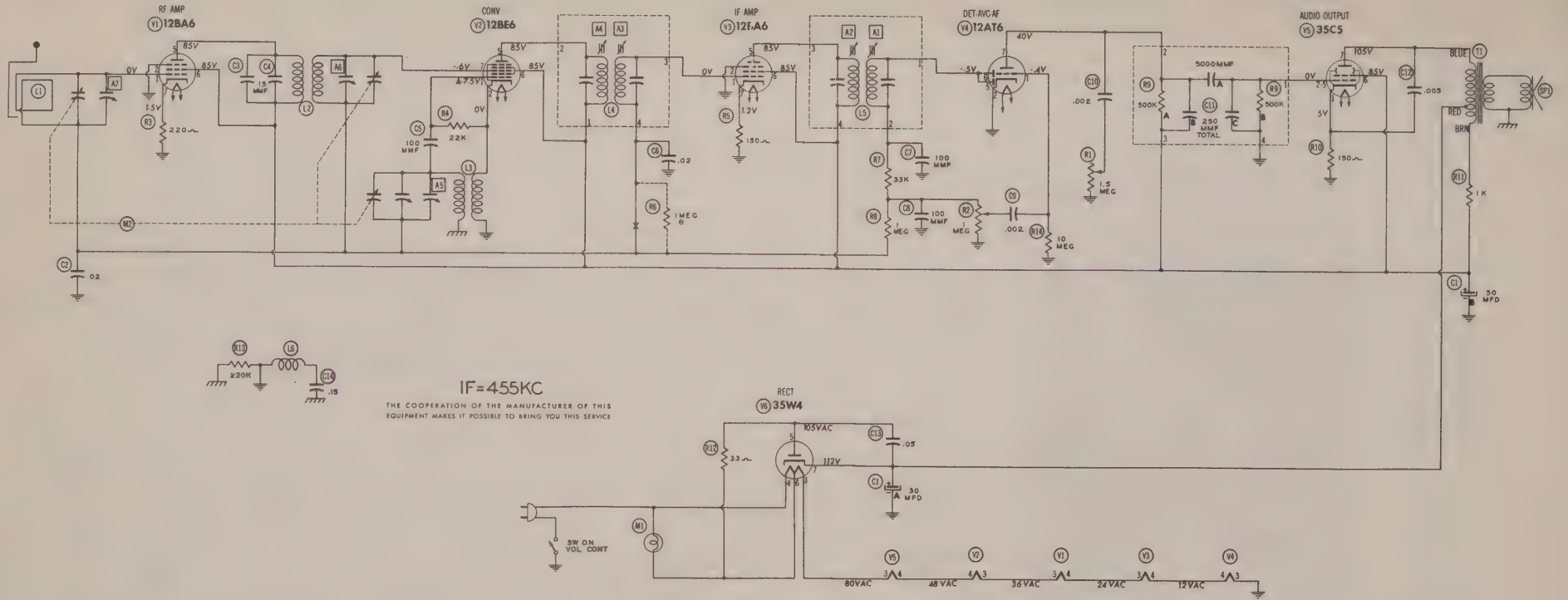
CORONADO
MODEL 55RA37-43-8355



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BA6	2Meg	0Ω	40Ω	27Ω	†1.2KΩ	†1.2KΩ	220Ω
V 2	12BE6	22KΩ	2.8Ω	40Ω	53Ω	†1.2KΩ	†1.2KΩ	2Meg
V 3	12BA6	2.5Meg	0Ω	27Ω	14Ω	†1.2KΩ	†1.2KΩ	150Ω
V 4	12AT6	10Meg	0Ω	0Ω	14Ω	1Meg	1Meg	†500KΩ
V 5	35C5	150Ω	500KΩ	92Ω	53Ω	INF	†1.2KΩ	†220Ω
V 6	35W4	†10Ω	INF	92Ω	130Ω	160Ω	125Ω	250KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 7 OF V6

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225-9

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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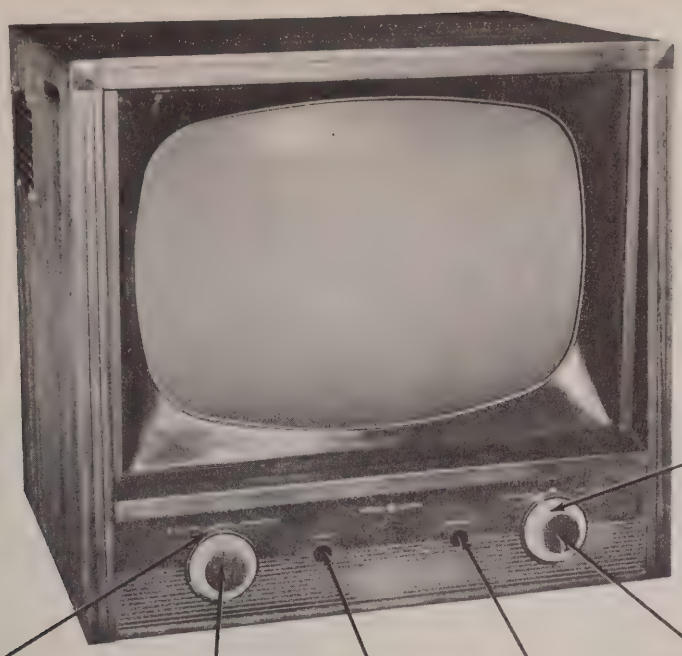

GENERAL ELECTRIC
MODELS 21T7, 21T8

GENERAL ELECTRIC MODEL 21T7

TRADE NAME	General Electric Models 21T7, 21T8
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N. Y.
TYPE SET	Television Receiver
TUBES	Twenty-Five
POWER SUPPLY	110-120 Volts AC - 60 Cycle RATING 2.12 Amp. @ 117 Volts AC
TUNING RANGE-	Channels 2 thru 13, Video IF 45.75MC, Sound IF 41.25 MC (Intercarrier)

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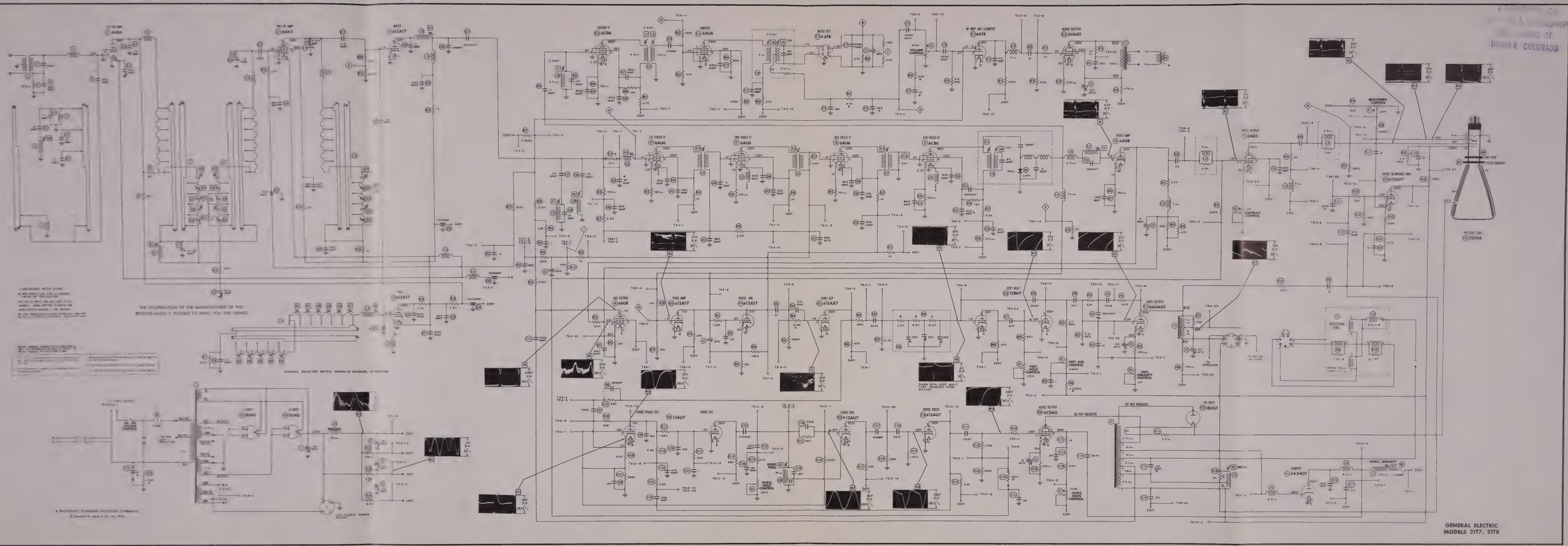
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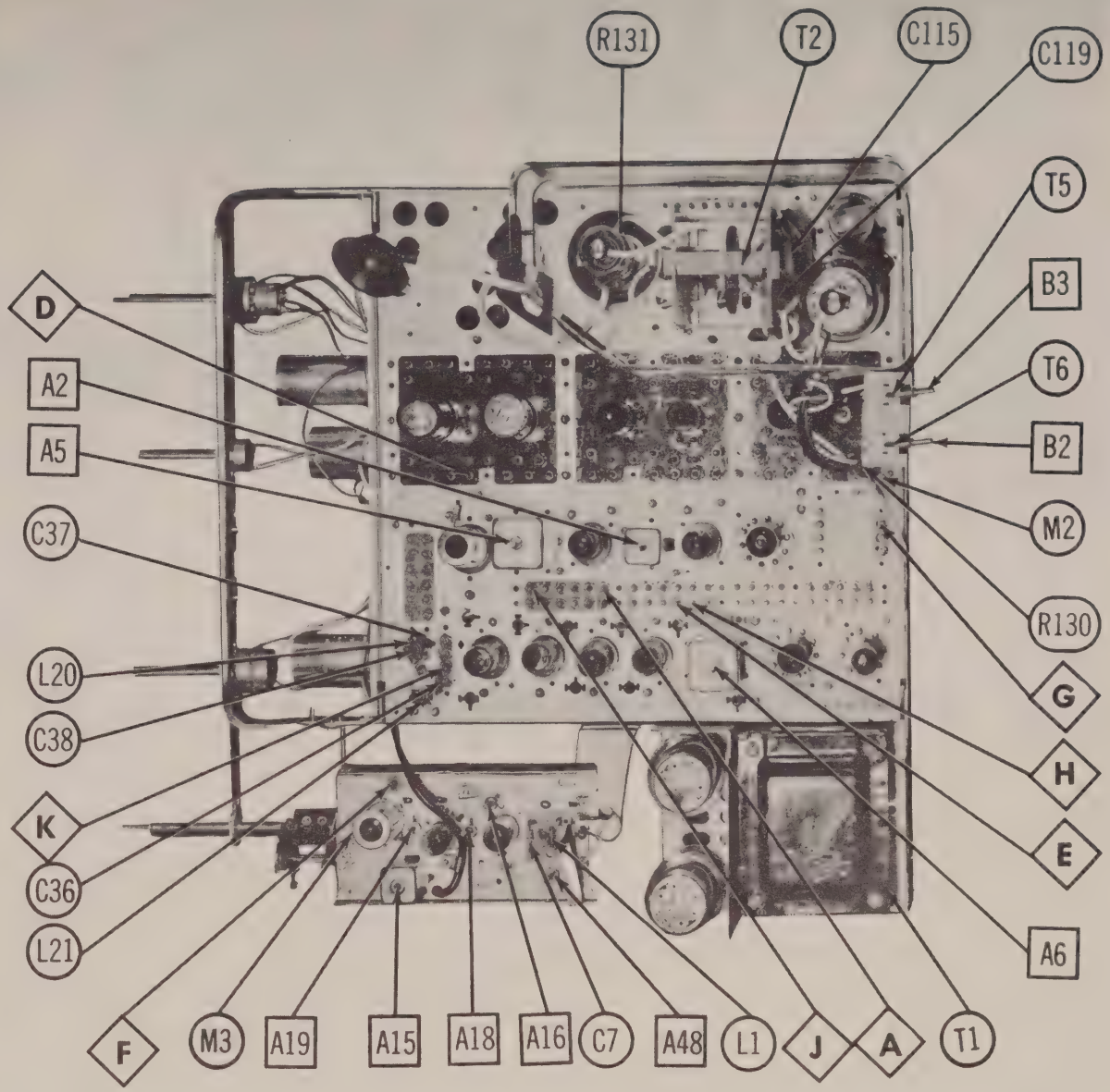

For Tube Location See Tube Placement Chart Page 5.

CHASSIS TOP VIEW

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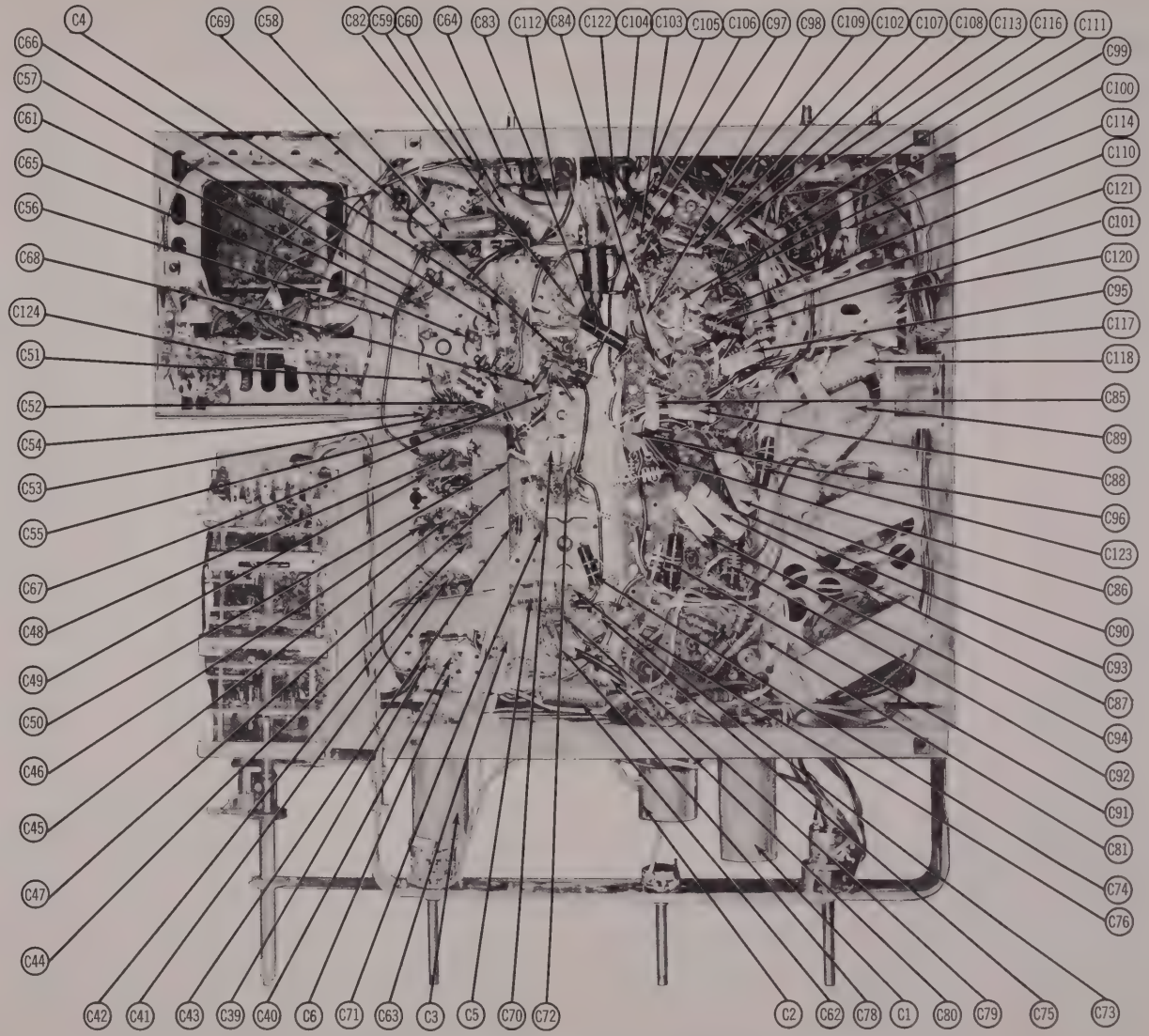

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART

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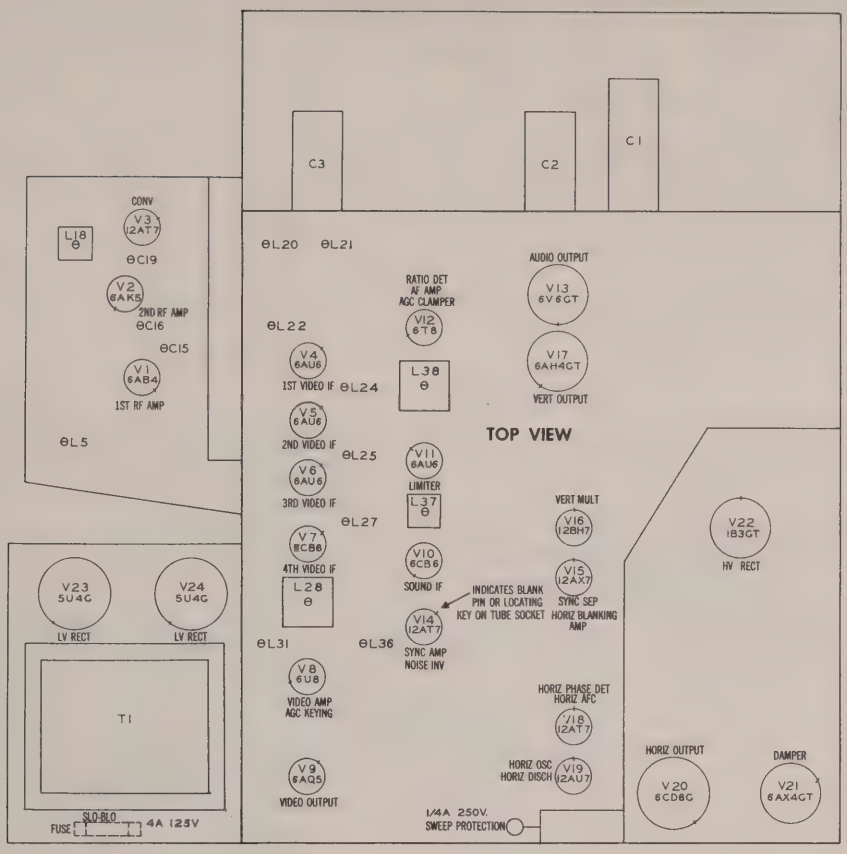

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V23, V24, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6, V7
No pic, no sound, has snow - V1, V2, V3, V4
No pic, has sound, has raster - V8, V7, V25
Has pic, no sound - V10, V11, V12, V13
Overloaded picture - V8, V12

SYNC FAILURE
No vert. sync - V15, V16, V17
No horiz. sync - V15, V18, V19
No vert. or horiz. sync - V14, V15

SWEEP FAILURE
No raster, has sound - V19, V20, V21, V22, V25, Fuse (M2)
No vertical deflection - V16, V17
Poor vert. linearity or foldover - V16, V17
Poor horiz. linearity or foldover - V19, V20, V21
Narrow picture - V19, V20, V21, V22, V23, V24
Vert. off freq. - V15, V16, V17
Horiz. off freq. - V15, V18, V19

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Remove plate cap of V20.
Temporarily connect a 2500Ω, 25 watt resistor from the junction of C117, C118 and M2 to chassis.
Remove V14 from its socket.
Turn picture contrast control fully clockwise .
Turn volume control and brightness control fully counter clockswise.
Switch channel selector to channel 11.
Turn fine tuning control fully counter clockwise .
Allow 20 minute warm up period for receiver and test equipment.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.
If a 4.5MC signal of crystal accuracy is not available tune in a television signal and adjust A1, A2, A3 and A4 as shown in steps 1, 2 and 3 with VTVM connected as shown in these steps.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to point (E). Low side to chassis.	4.5MC (Unmod.)	11 or any noninterfering channel	High side to point (A). Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	"	"	High side to point (B). Common to chassis.	A4	"
3.	"	"	"	"	High side to point (D). Common to point (C).	A5	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 1, 2, and 3. Remove matched 100KΩ resistors.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to point (E). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	11 or any nointerfering channel	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A1, A2, A3	Disconnect stabilizer capacitor C5. Adjust for curve of maximum amplitude and symmetry as shown in Fig.1. Attenuate generator output to avoid distortion of response curve.
2.	"	"	"	"	"	Vert. Amp. thru 10KΩ to point (B). Low side to chassis.	A4	"
3.	"	"	"	"	"	Vert. Amp. thru 10KΩ to point (D). Low side to chassis.	A5	Reconnect stabilizer capacitor C5. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A4 for maximum amplitude and straightness of crossover lines. Remove matched 100KΩ resistors.

TRAP ALIGNMENT

Due to extremely high adjacent channel trap attenuation sweep observation of these traps becomes difficult. Therefore all traps should be tuned by applying an AM signal and adjusted for minimum signal output. The 4.5 trap may be sweep aligned if desired. In this case a 4.5 MC sweep signal should be used in step 8. Tune trap to minimum response at 4.5MC.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	100MMF	High side to point (F). Low side to chassis.	41.25MC (400% Mod)	11	Vert. Amp. thru 10KΩ to point (G). Low side to chassis.	A6	Adjust for MINIMUM 400% response.
5.	"	"	47.25MC (400% Mod)	"	"	A7	Adjust for MINIMUM 400% response. If necessary, set scope vertical amp. gain to maximum.
6.	"	"	38.0MC (400% Mod)	"	"	A8	Adjust for MINIMUM 400% response. If necessary, set scope vert. amp. gain to maximum. If insufficient null is observed turn A14 two or three turns.
7.	.01MFD	High side to point (E). Low side to chassis.	4.5MC (400% Mod)	"	Vert. Amp. thru detector (Fig. 3) to point (G). Low side to chassis.	A9	Remove V7 from its socket. Adjust for MINIMUM 400% response . Replace V7 in its socket.

VIDEO IF ALIGNMENT

Connect the netative lead of a 6 volt bias supply to point J . Connect the positive lead to chassis. Turn picture contrast control fully counter clockwise .
Calibrate the vertical gain of scope to give a two inch deflection with 1.75 volts peak to peak of applied signal. Alternate generator output to maintain two inches of amplitude at oscilloscope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.001MFD	High side to point (K). Low side to chassis.	44MC (10MC Swp)	42.0MC 45.75MC 42.5MC 45MC 41.25MC	11	Vert. Amp. thru 10KΩ to point (H). Low side to chassis.	A10, A11 A12, A13	Adjust for response curve similar to Fig. 4. A10 affects 42MC response and A-11 affects 45.75MC response. Adjust A12 and A13 for zero tilt and maximum gain without dip.
9.	"	High side to point (F). Low side to chassis.	44MC (10MC Swp)	41.25MC 42.0MC 42.5MC 45MC 45.75MC	"	"	A14, A15	Adjust to obtain maximum gain and proper marker positions as in Fig. 2. Peak of curve should be SLIGHTLY rounded and extend approximately 15 % beyond the 45MC marker.

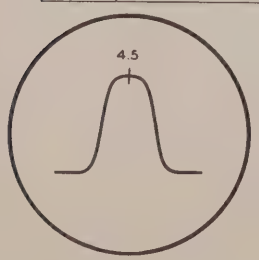

FIG.1

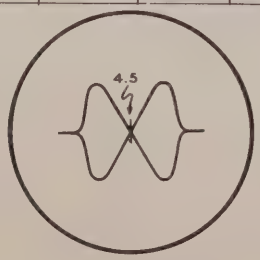

FIG.2

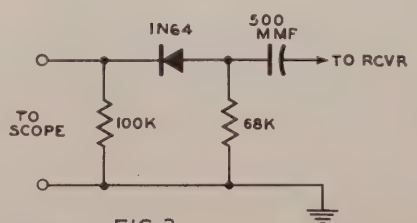

FIG.3

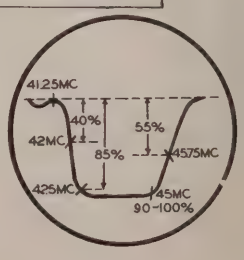

FIG.4

ALIGNMENT INSTRUCTIONS (cont)

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RF ALIGNMENT

Connect the bias supply as under video IF alignment and adjust for -3 volts at AGC lead to tuner.
Disconnect the antenna transmission line at the input of the tuner.
Disconnect the B+ lead to the oscillator section of V3.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across tuner input terminals with 120Ω in each lead.	213MC (15MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point (F). Low side to chassis.	A16, A17, A18, A19	Adjust for maximum gain and proper bandwidth as in Fig. 6. A17 affects bandwidth.
11.	"	"	207MC (15MC Swp)	205.25MC 209.75MC	12	"		Check tracking and adjust circuit dress of L12 if necessary.
			201MC (15MC Swp)	199.25MC 203.75MC	11			
			195MC (15MC Swp)	193.25MC 197.75MC	10			
			189MC (15MC Swp)	187.25MC 191.75MC	9			
			183MC (15MC Swp)	181.25MC 185.75MC	8			
			177MC (15MC Swp)	175.25MC 179.75MC	7			
12.	"	"	85MC (15MC Swp)	83.25MC 87.75MC	6	"	A20, A21, A22, A23	Adjust for maximum gain and response curve similar to Fig. 7.
13.	"	"	79MC (15MC Swp)	77.25MC 81.75MC	5	"	A24, A25 A26	If necessary, compress or expand A24, A25, and A26 for proper tracking.
14.	"	"	69MC (15MC Swp)	67.25MC 71.75MC	4	"	A27, A28 A29	If necessary, compress or expand A27, A28 and A29 for proper tracking.
15.	"	"	63MC (15MC Swp)	61.25MC 65.75MC	3	"	A30, A31, A 32	Adjust for maximum gain and response curve similar to Fig. 7.
16.	"	"	57MC (15MC Swp)	55.25MC 59.75MC	2	"	A33, A34, A35	If necessary, compress or expand A33, A34 and A35 for proper tracking.

OSCILLATOR ALIGNMENT

The bias setting should remain at -3 volts as under RF alignment.
Set the fine tuning control at ½ turn from the extreme counter clockwise position for the entire oscillator alignment.
Reconnect the B+ lead to the oscillator section of V3.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	Two 120Ω Carbon Resistors	Across tuner input terminals with 120Ω in each lead.	213MC (15MC Swp)	211.25MC	13	Vert. Amp. thru 10KΩ to point (E). Low side to chassis.	A36	Adjust to place marker at 50% on high frequency side of response curve.
			207MC (15MC Swp)	205.25MC	12		A37	
			201MC (15MC Swp)	199.25MC	11		A38	
			195MC (15MC Swp)	193.25MC	10		A39	
			189MC (15MC Swp)	187.25MC	9		A40	
			183MC (15MC Swp)	181.25MC	8		A41	
			177MC (15MC Swp)	175.25MC	7		A42	
			85MC (15MC Swp)	83.25MC	6		A43	
			79MC (15MC Swp)	77.25MC	5		A44	
			69MC (15MC Swp)	67.25MC	4		A45	
			63MC (15MC Swp)	61.25MC	3		A46	
			57MC (15MC Swp)	55.25MC	2		A47	

IF TRAP ALIGNMENT

The IF trap, L5, is for the purpose of eliminating interference in the IF range.
Tune to the channel on which interference is noted and adjust A48 for MINIMUM interference pattern on the screen. As it is possible to tune L5 so that channel 2 is attenuated care should be used to avoid that possibility while adjusting A48.

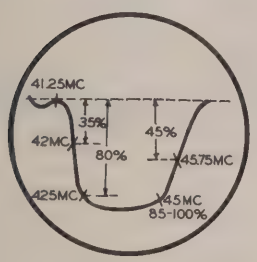


FIG. 5

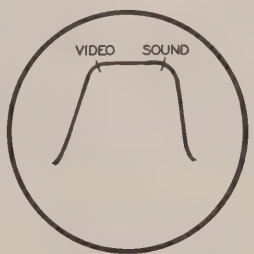


FIG. 6

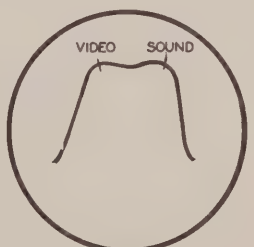
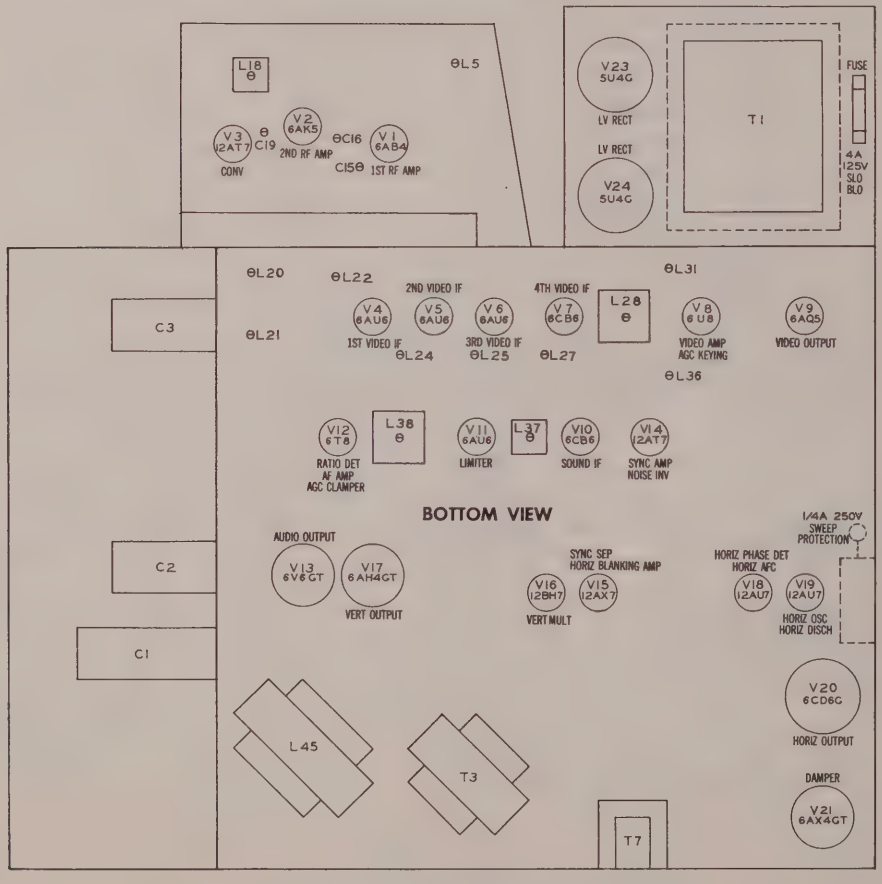


FIG. 7

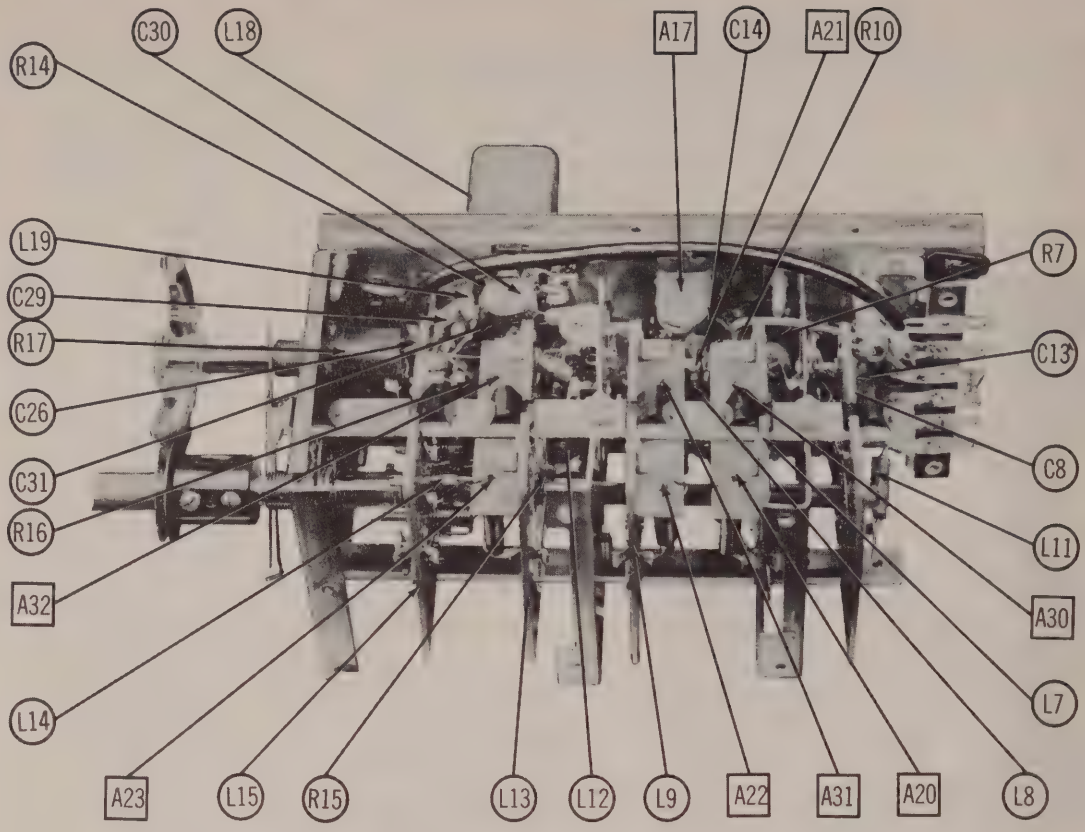
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AB4	†5.6KΩ	0Ω	.1Ω	0Ω	†70Ω	0Ω	120Ω		
V 2	6AK5	530KΩ	0Ω	0Ω	.1Ω	†6.7KΩ	†18KΩ	0Ω		
V 3	12AT7	†5.6KΩ	8.2KΩ	.2Ω	0Ω	0Ω	† 6.7KΩ	223KΩ	0Ω	.1Ω
V 4	6AU6	52KΩ	0Ω	0Ω	.1Ω	†4.8KΩ	†4.8KΩ	100Ω		
V 5	6AU6	50KΩ	0Ω	0Ω	.1Ω	†4.8KΩ	†4.8KΩ	100Ω		
V 6	6AU6	48KΩ	0Ω	0Ω	.1Ω	†5.8KΩ	†5.8KΩ	100Ω		
V 7	6CB6	.1Ω	180Ω	0Ω	.1Ω	†6KΩ	†24KΩ	0Ω		
V 8	6U8	†16KΩ	†120KΩ	†70Ω	.1Ω	0Ω	530KΩ	16KΩ	150Ω	3KΩ
V 9	6AG5	700KΩ	2.3KΩ	0Ω	.1Ω	†4.1KΩ	†70Ω	700KΩ		
V 10	6CB6	2.5Ω	180Ω	0Ω	.1Ω	†4.8KΩ	†23KΩ	0Ω		
V 11	6AU6	47KΩ	0Ω	0Ω	.1Ω	†27KΩ	†470KΩ	0Ω		
V 12	6T8	INF	27KΩ	INF	.1Ω	0Ω	440KΩ	0Ω	6.8Meg	†470KΩ
V 13	6V6GT	0Ω	0Ω	†1.2KΩ	†540Ω	†470Ω	INF	.1Ω	220Ω	
V 14	12AT7	†47KΩ	120KΩ	15KΩ	0Ω	0Ω	†47K Ω	5.6KΩ	0Ω	.1Ω
V 15	12AX7	†47KΩ	1.1Meg	0Ω	0Ω	0Ω	#40Ω	1Meg	29KΩ	.1Ω
V 16	12BH7	†47KΩ	47KΩ	0Ω	.1Ω	.1Ω	#5Meg	130KΩ	0Ω	0Ω
V 17	6AH4GT	2.2Meg	0Ω	2.2Meg	†23KΩ	†720Ω	1.2KΩ	.1Ω	1.2KΩ	
V 18	12AU7	400KΩ	190KΩ	300KΩ	.1Ω	.1Ω	†68KΩ	1.3Meg	0Ω	0Ω
V 19	12AU7	†33KΩ	70KΩ	48Ω	0Ω	0Ω	†33KΩ	1Meg	0Ω	.1Ω
V 20	6CD6G	0Ω	.1Ω	120Ω	600KΩ	600KΩ	†26KΩ	0Ω	†27KΩ	TOP CAP #24Ω
V 21	6AX4GT	INF	INF	5Meg	INF	†100Ω	INF	.1Ω	0Ω	
V 22	1B3GT	PINS	1 - 8	HAVE	INF	RESISTANCE				TOP CAP #454Ω
V 23	5U4G	INF	25KΩ	INF	12.5Ω	INF	12.5Ω	INF	25KΩ	
V 24	5U4G	INF	25KΩ	INF	13Ω	INF	13Ω	INF	25KΩ	
V 25	21EP4B	0Ω	1Meg	PIN 10 #2.2Meg	PIN 11 240KΩ	PIN 12 .1Ω				

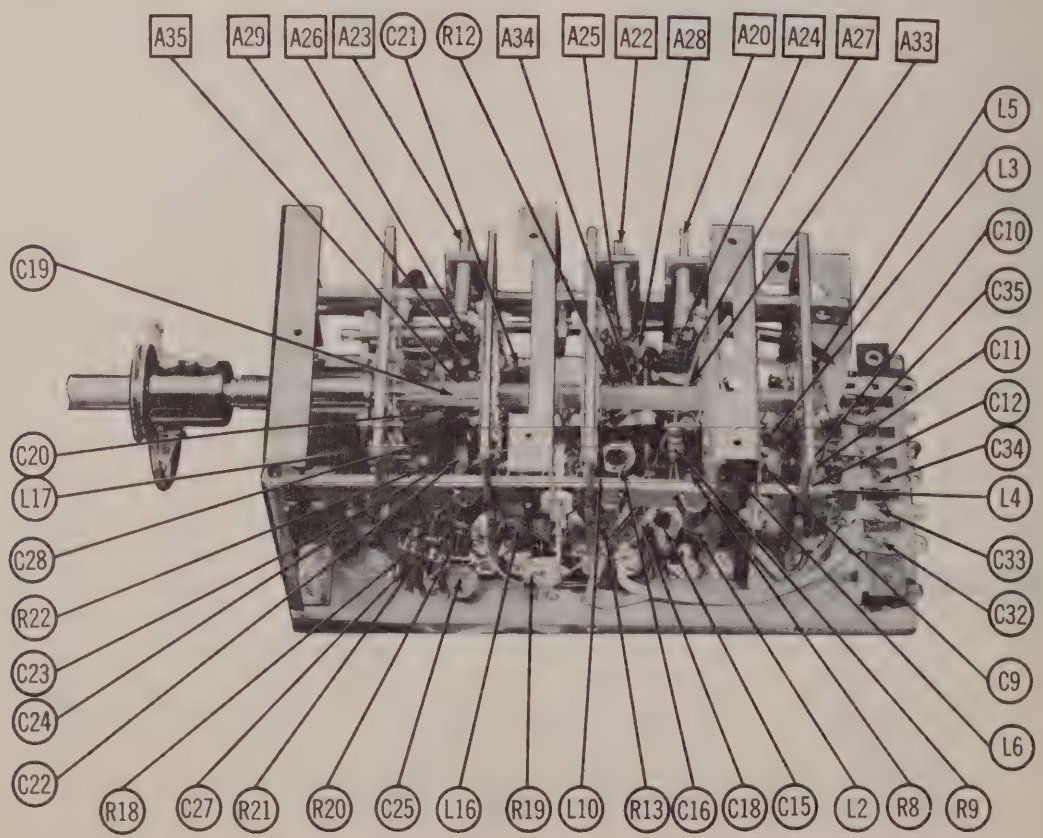
† MEASURED FROM PIN 8 OF V23
# MEASURED FROM PIN 3 OF V21



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

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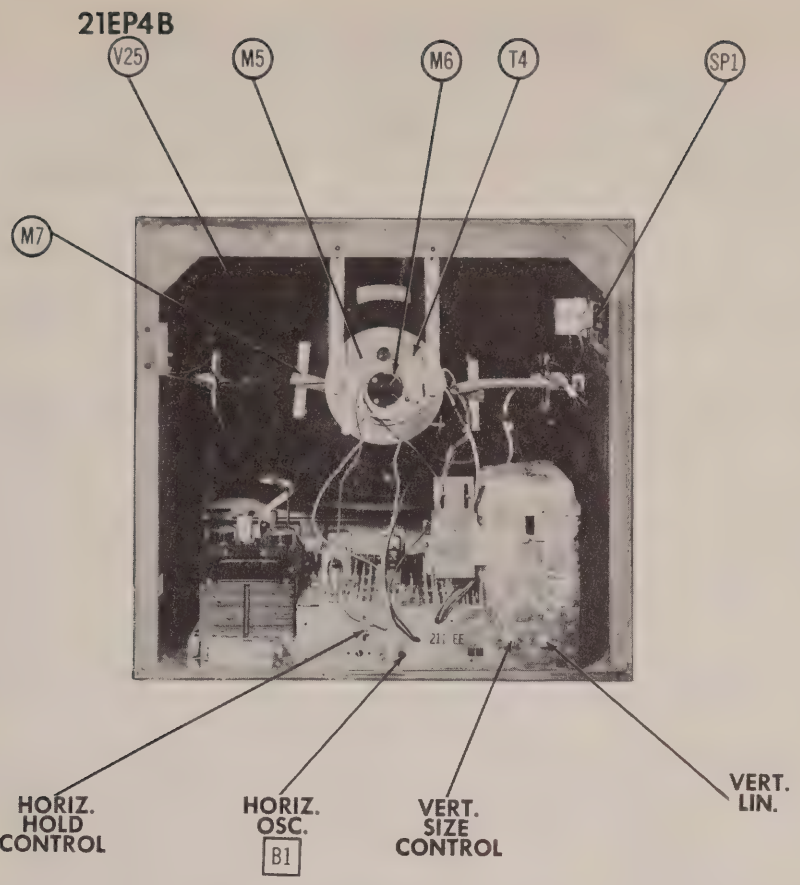

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Replace plate cap of V20.

Remove 2500Ω/25 watt resistor.

Replace V14 in its socket.

Remove test equipment.

Turn the set on and tune in a TV station preferably a test pattern.

Set the horizontal hold control at mid-position, and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

The horizontal drive control should be rotated in a counter clockwise direction as far as possible without compression of the center of the picture, or presence of a vertical white line.

The width slug (B2) should be adjusted for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V19, V20, V21, V23 and V24. Check adjustment of B2 and B3. Check waveform W19.

If Satisfactory	If Unsatisfactory
Check C113, C114, C117, C118, T2, T4A, R127, R128 and R130. Check other associated components.	Check C107, C108, C111, R129, R123, R117, R118, R119 and other associated circuit components.

DRIVE LINES

Check by substitution V19, V20 and V21. Check C111, C118, C107, C108, T2, T4A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V19, V20 and V21. Check adjustment B2 and B3. Check T2, T4A, C113, C114 and other associated components.

FOLDS

Check by substitution V19, V20 and V21. Check T2, T4A and other associated components.

XMAS TREE EFFECT

Substitute V18 and V19. Check C102, C104, C105, C106, L40 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V16 and V17. Check waveform W11.

If Satisfactory	If Unsatisfactory
Check T3, T4B, R98 and other associated components.	Check R91, R92, R96, C90, C91 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V16 and V17. Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check V16 and V17. Check C3C, T3, T4B and other associated circuit components.

COMPRESSED AT TOP

Check by substitution V16 and V17. Check C90, C91, R91, R92 and other associated components.

FOLDS

Check by substitution V16 and V17. Check components associated with these stages.

SYNC

LOSS OF HORIZONTAL AND VERTICAL SYNC

Check by substitution V14 and V15. Check components associated with these stages, especially sync coupling capacitors.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Check by substitution V15 and V16. Check waveform W8.

If Satisfactory	If Unsatisfactory
Check components associated with V16.	Check vertical integrator and components associated with V15.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V18 and V19. Check associated components especially C102, C103, C104, C105, C106, C109, C110 and L40.

HORIZONTAL BENDING OR S-ING

Check by substitution V14, V15, V18, V19 and V20. Check C100, C101 and other associated components.

VIDEO

LOSS OF VIDEO

Check by substitution V8 and V9. Check picture tube and components associated with V8 and V9.

SOUND BARS (4.5MC BEAT)

Check local oscillator adjustment. Check adjustment A9. Check Video IF Alignment.

NEGATIVE PIX

Check by substitution V8 and V9. Check AGC network for component failure. Check components associated with the video amplifier and output stages.

POOR CONTRAST

Check by substitution V8 and V9. Check Video Detector crystal and assembly. Check picture tube and components associated with V8 and V9.

SMEAR

Check by substitution V8 and V9. Check video detector crystal and assembly. Check C58, C60, L32, L35, R41, R42, R43, R44, and R47 for change of value or failure. Check picture tube and other associated components.

WIDE BLACK BAR ACROSS PIX

Check V1, V2, V3, V4, V5, V6, V7, V8 and V9 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V10, V11, V12 and V13. Check stages of V12B and V13 using and audio signal generator. Apply signal across R70.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V12B and V13.

BUZZ

Check local oscillator adjustment. Adjust A5 for minimum buzz. If buzz is still objectionable substitute V12 and readjust A4 and A5. Check C5 and C73.

DISTORTED SOUND

Check by substitution V10, V11, V12 and V13. Check stages of V12B and V13 using an audio signal generator and scope. Apply audio signal across R70. Connect scope across audio output transformer.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and circuit components.	Check components associated with V12B and V13.

PARTS LIST & DESCRIPTION

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		General Electric PART No.	STANDARD REPLACEMENT		
V1	1st RF Amplifier	6AB4	6AB4	5CE	
V2	2nd RF Amplifier	6AK5	6AK5	7BD	
V3	Converter	12AT7	12AT7	9A	
V4	1st Video IF Amp.	6AU6	6AU6	7BK	
V5	2nd Video IF Amp.	6AU6	6AU6	7BK	
V6	3rd Video IF Amp.	6AU6	6AU6	7BK	
V7	4th Video IF Amp.	6CB6	6CB6	7CM	
V8	Video Amplifier - AGC Keying	6U8	6U8	9AE	
V9	Video Output	6AQ5	6AQ5	7BZ	
V10	Sound IF Amp.	6CB6	6CB6	7CM	
V11	Limiter	6AU6	6AU6	7BK	
V12	Ratio Detector - AF Amplifier - AGC Clamper	6T8	6T8	9E	
V13	Audio Output	6V6GT	6V6GT	7S	
V14	Sync Amplifier - Noise Inverter	12AT7	12AT7	9A	
V15	Sync Separator Horiz. Blanking Amplifier	12AX7	12AX7	9A	
V16	Vert. Mult	12BH7	12BH7	9A	
V17	Vert. Output	6AH4GT	6AH4GT	8EL	
V18	Horiz. Phase Det- Horiz. AFC	12AU7	12AU7	9A	
V19	Horiz. Oscillator - Horiz. Discharge	12AU7	12AU7	9A	
V20	Horiz. Output	6CD6G	6CD6G	5BT	
V21	Damper	6AX4GT	6AX4GT	4CG	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23	LV Rectifier	5U4G	5U4G	5T	
V24	LV Rectifier	5U4G	5U4G	5T	

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CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	General Electric PART No.	SYLVANIA PART No.	GENERAL ELECTRIC PART No.		
V25	21EP4B	21EP4B 21EP4A 21EP4① 21FP4① 21FP4A①	21EP4B	12D 12D	① Circuit changes necessary.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	350	RCE-154	AFH3-29		CO23			TVL-2637	
B	▲90	350								
C2A	▲40	350	RCE-156	AFH4-51				FP428	TVL-4621	
B	■20	250								
C	▲5	250								
D	10	25								
C3A	■20	350	RCE-155	AFH2-54					TVL-3629	
B	▲30	350		PRS150/100						
C	▲100	75								
C4	1	50	RCE-090	PRS150/4		BBR-1-50T		TC31	TVA-1300	
C5	1	50	RCE-090	PRS150/4		BBR-1-50T		TC31	TVA-1300	
C6	1	50	RCE-090	PRS150/4		BBR-1-50T		TC31	TVA-1300	
C7	1		RCN-001	SIINP0	TCZ-1		NP0K-010		5TCCB-V1	
C8	800		RCW-3037	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C9	680		RCW-3045	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C10	5		RCW-3057	SI5NP0	TCZ- 4.7		NP0K-050	ZT-555	5TCCB-V47	
C11	10		RCW-3066							
C12	10		RCW-3066							
C13	5	500	UCG-1005	1469-000005		5R5V5			MS-55	
C14A	800		RCN-027	BPD-2X001	DD2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	800									
C15	1-5		RCY-065							
C16	1-5		RCY-065							
C17	15		RCW-3076	SII5	D6-150		GP1K-150	UC-5415	5GA-Q15	
C18	800		RCW-3037	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C19	.6-2.4		RCY-048							
C20	680		RCW-3027	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C21	680		RCW-3045	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C22	3.9		RCN-055							
C23	1.5		RCW-3046							
C24	800		RCW-3037	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C25	800		RCW-3037	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C26	12		RCW-3074							
C27	800		RCW-3037	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C28	5	500	UCG-1005	1469-000005		5R5V5			MS-55	
C29	800		RCW-3037	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C30	39		RCW-3092	SI39NP0	TCZ-39		NP0K-390		5TCC-Q39	
C31	800		RCW-3037	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C32	1000		RCW-3095	EF-001	MFT-1000				503C-D1	
C33	1000		RCW-3095	EF-001	MFT-1000				503C-D1	
C34	1000		RCW-3095	EF-001	MFT-1000				503C-D1	
C35	1000		RCW-3095	EF-001	MFT-1000				503C-D1	
C36	75	500		1469-000075						
C37	22	500								
C38	8	500								
C39	47	500	UCG-1020	1469-00005		5R5Q5		MCB225	MS-45	Note 6
C40	800		RCW-3037	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C41	680		RCW-3051	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C42	800		RCW-3037	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C43	800		RCW-3037	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C44	5	500	UCG-1005	1469-000005		5R5V5		MCB205	MS-55	
C45	330		RCW-2033	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	

PARTS LIST & DESCRIPTION (continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: General Electric PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L31	4.5MC Trap	.8Ω		RLI-203	20-1004	TV-151	1470	GE part # includes C56, tuning core part #REI-016
L32	Series Peaking Coil	6Ω		RLI-196	19-3125 *	TV-182 *	6153 *	120 Microhenries, wound on 4.3KΩ resistor
L33	Shunt Peaking Coil	7Ω		RLI-197	19-3250	TV-185	6154	220 Microhenries
L34	Shunt Peaking Coil	5Ω		RLI-205	19-3125		6153	120 Microhenries
L35	Series Peaking Coil	6.5Ω		RLI-193	19-3160 †	TV-184 †	4644 †	150 Microhenries, wound on 33KΩ resistor
L36	1st.Sound IF	2.5Ω		RLI-182	20-1005	TV-151	1469	GE part no. includes C65 & C66, core part #REI-026
L37	2nd.Sound IF	4.8Ω	4.6Ω	RLI-180	16-3445	TV-108	1466	Tuning core part #REI-016
L38	Ratio Det.	9Ω	.6ΩCT	RTD-013	17-3493 ▲	TV-115 ▲	1498 ▲	Includes 270Ω resistor
L39	Audio Coupling	3Ω		RLI-154			4608	3.3 Microhenries (IRC part #CLA) Tapped @ 50Ω
L40	Horiz.Osc.	120Ω		RLC-125	19-1577			
L41	RF Choke	8.2Ω		RLI-138			4612	10 Microhenries (IRC part #CL-1)
L42	RF Choke	8.2Ω		RLI-138			4612	10 Microhenries (IRC part #CL-1)
L43	RF Choke	8.2Ω		RLI-138			4612	10 Microhenries (IRC part CL-1)

* Parallel with 4.3KΩ resistor
† Parallel with 33KΩ resistor
▲ Add 270Ω resistor externally.
▲ Use adaptor plate and add 270Ω resistor externally.

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L44	.280ADC	70Ω	3.8 Hy.	RLF-061				

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: General Electric PART No. FUSE	General Electric PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	4A	REF-010	RJB-027	313004. (3AG S/B-4A)		MDX 4	
M2	3AG P/T	1/4A			318.250 (3AG P/T-1/4A)		GJV 1/4	

MISCELLANEOUS

ITEM No.	PART NAME	General Electric PART No.	NOTES
M3	Tuner	RJX-051	VHF - not interchangeable with previous production units.
M4	Crystal	RED-003	1N64
M5	Focus Magnet	*RLF-058	Includes centering lever
M6	Ion Trap	RET-103	
M7	Correction Magnet	REA-004	2 Used
	Cabinet	RAV-214	21T7 (Mahogany)
	Cabinet	RAV-216	21T8 (Brown leatherette)
	Knob	RDK-286	Channel Selector Model 21T7
	Knob	RDK-287	Fine tuning
	Knob	RDK-288	Off/on Volume
	Knob	RDK-289	Contrast
	Knob	RDK-290	Vert. Hold - Brightness (2 used)
	Knob	RDK-333	Off/On/Volume - Grey-green
	Knob	RDK-334	VHF Channel Selector - Grey-green
	Knob	RDK-335	Brightness & vert. hold - grey-green
	Back Cover	RAB-208	Less cup and power cord - Model 21T7
	Back Cover	RAB-220	Less cup and power cord - Model 21T8
	Mask	RDM-034	Models 21T7, 21T8
	Safety Glass	RDW-063	Models 21T7, 21T8

* Some models may use RLF-065 with centering lever at top of assembly.
These units do not incorporate a focus disc or guide funnel and may be replaced with RLF-058.

TROUBLE SHOOTING AIDS (cont)

L. F. DEANSHIP
3324 MEADE ST.
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check fuse M1, AC interlock assembly, switch on volume control, yoke plug interlock and T1. If filaments light, check V23, V24 and B+ filter and decoupling components.

SMALL AND/OR DIM PICTURE

Substitute V23 and V24. Check B+ filter and decoupling components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse M2. Check by substitution V19, V20, V21 and V22. Check waveform W19.

If Satisfactory	If Unsatisfactory
Check R131, T2, T4A and other associated components.	Check C107, C108, C111, R117, R129 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V19, V20, V21, V22, V23 and V24. Check picture tube. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V19, V20, V21 and V22. Check R131, T2, T4A and other associated circuit components.

GENERAL

RASTER SOUND NO PIX

See "Loss of Video".

RASTER NO SOUND NO PIX

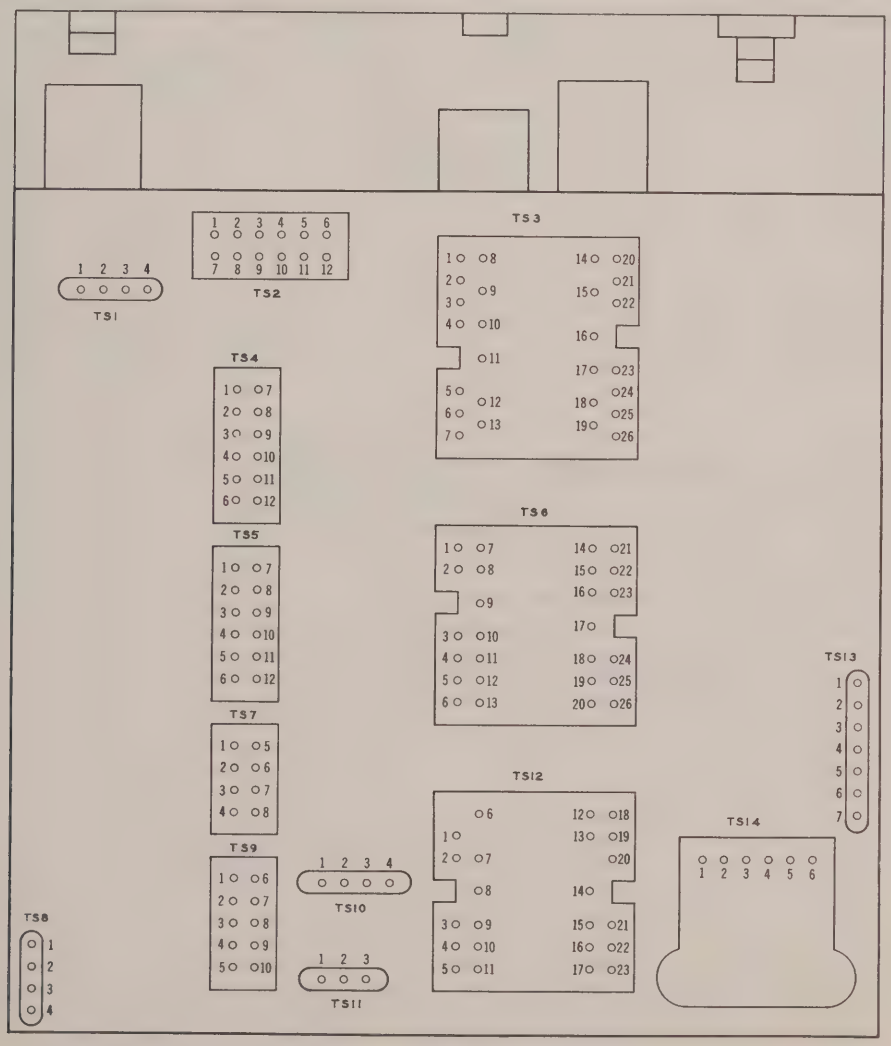
Check by substitution V1, V2, V3, V4, V5, V6 and V7. Check video detector crystal and assembly. Check components associated with the Video IF Strip.

NO RASTER NO SOUND

See "Dead Set".

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.



TERMINAL STRIP LOCATION CHART

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L40) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the Ratio detector secondary (L38) located on top of chassis. (See tube placement chart).

FUSES

Two fuses are used, One for horizontal sweep circuit protection and one for LV power supply protection. (For location, see tube placement chart).

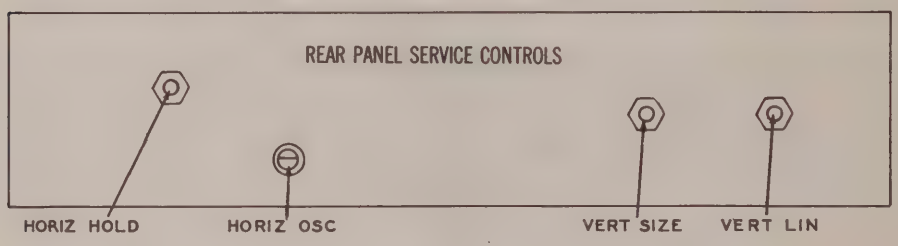
CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

ANTI-PIN CUSHION ADJUSTMENT

Reduce the picture size so that the sides of the raster are visible, and position the magnets so that all sides are straight lines and the corners are at right angles.

SERVICE ADJUSTMENT LOCATION



DISASSEMBLY INSTRUCTIONS

Remove 6 push on type control knobs from front panel.

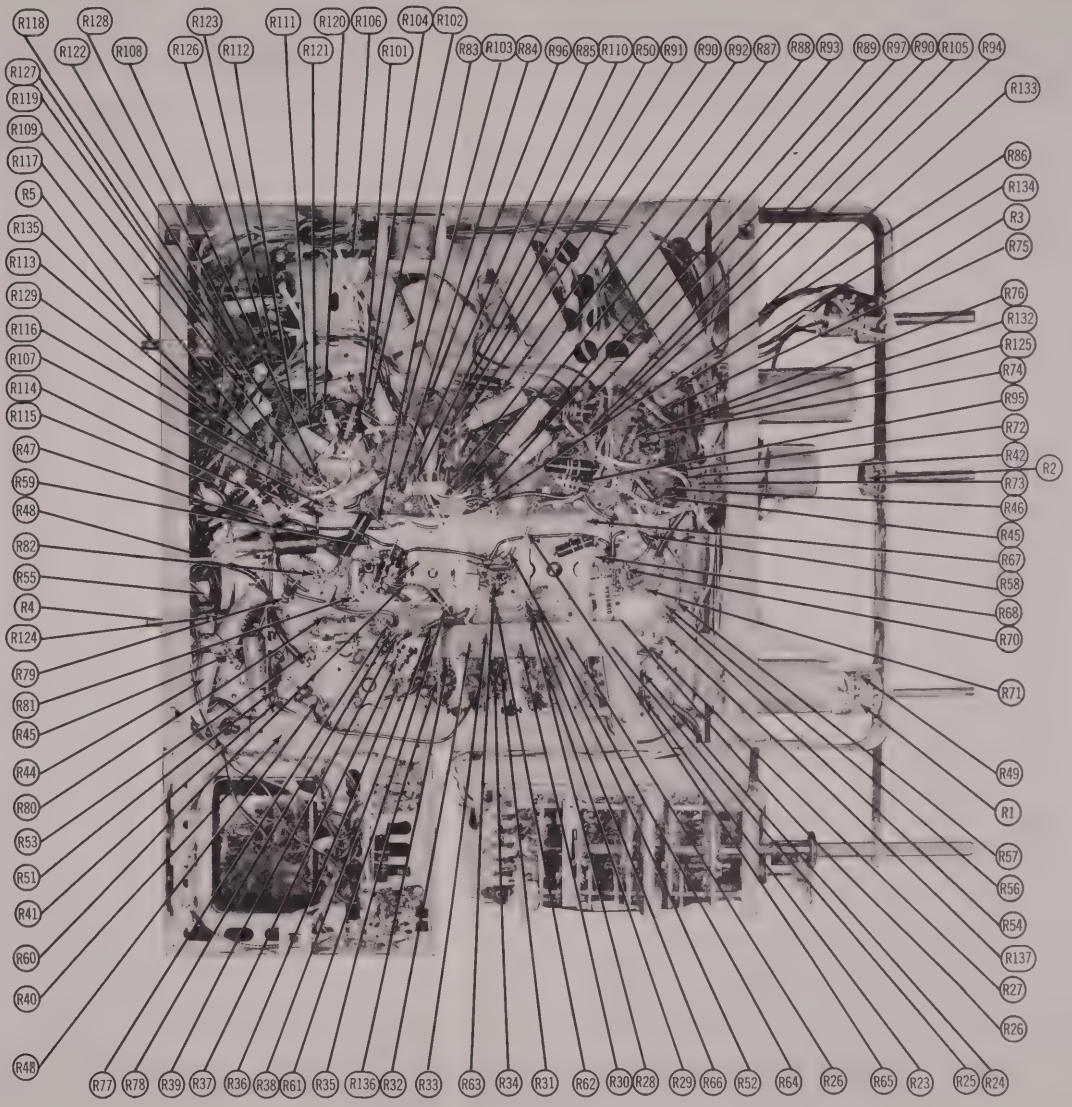
Remove 7 wood and 1 metal screws. Remove rear cover.

Disconnect built-in antenna and speaker.

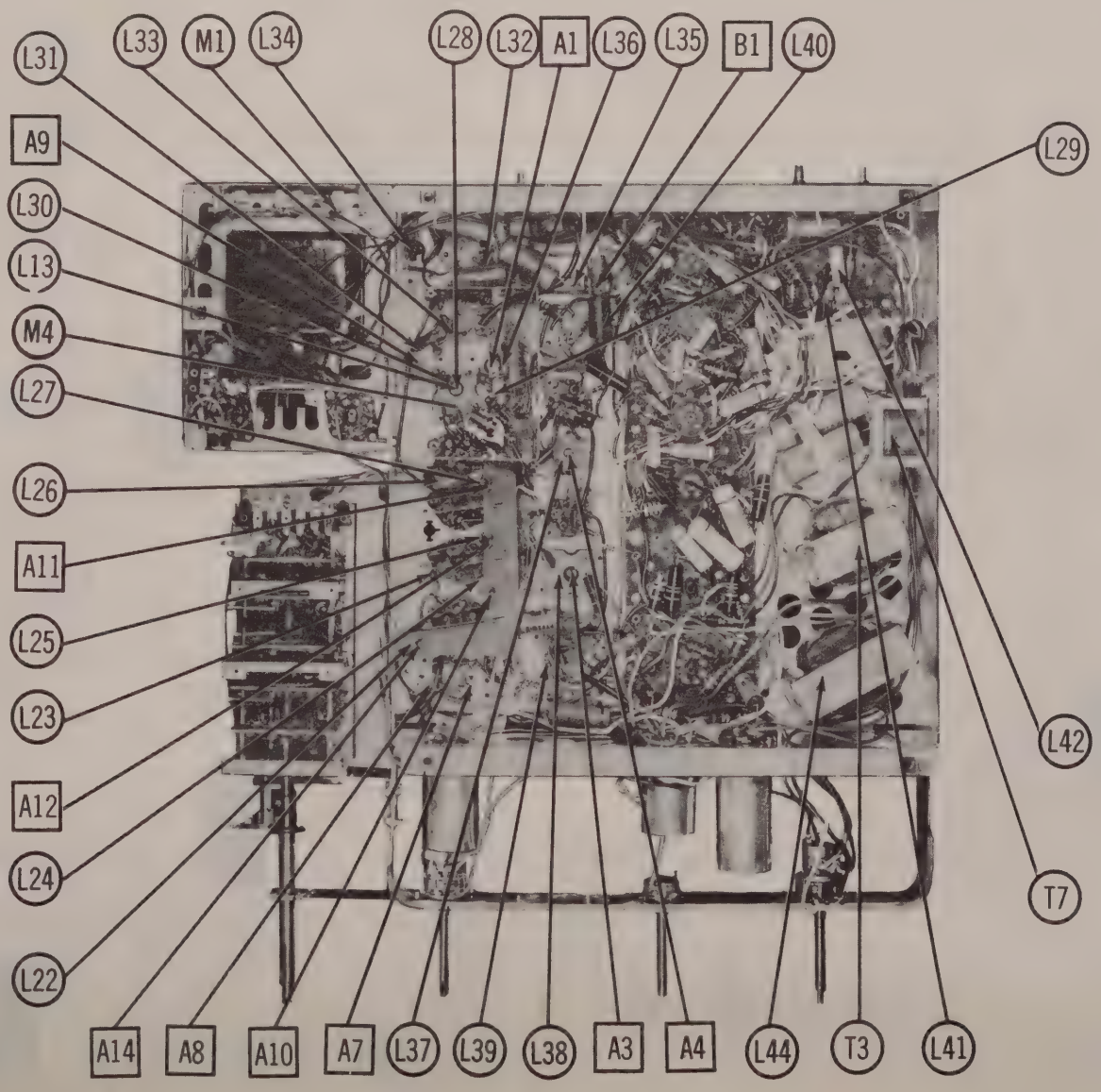
Loosen 2 wood screws. Remove antenna bracket.

Disconnect yoke plug, horizontal yoke plug, HV lead, CRT socket.

Remove 5 chassis bolts. Remove chassis.



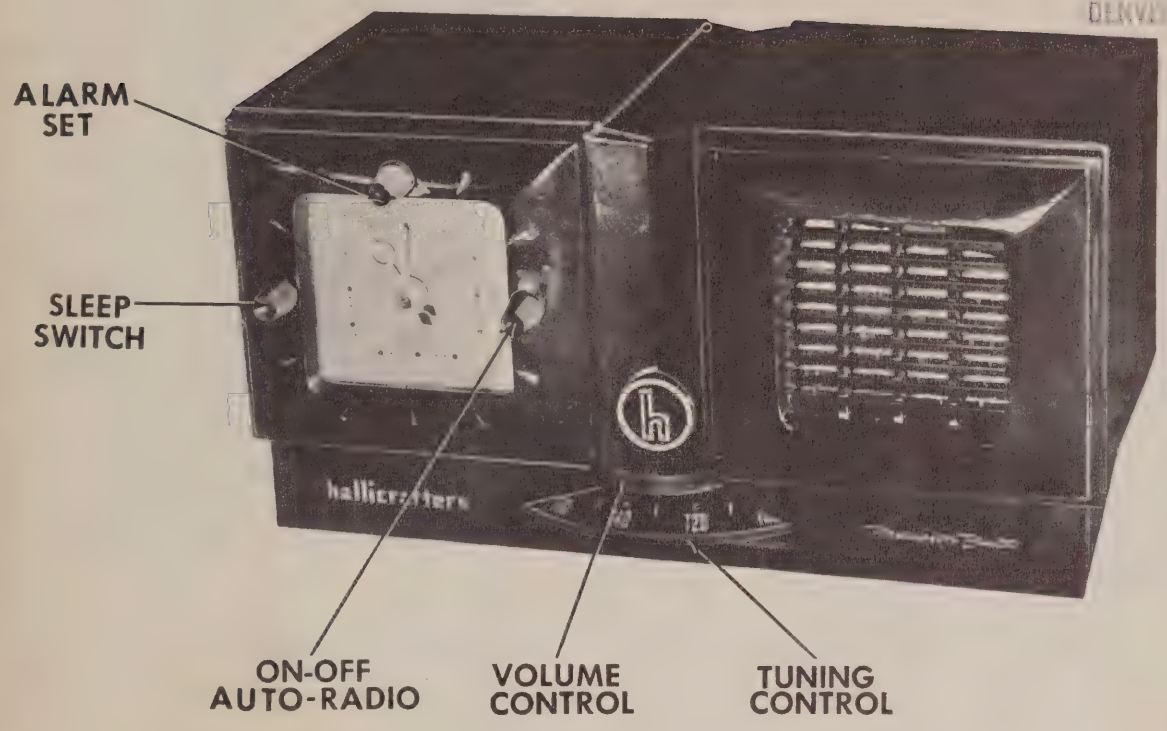
CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PROPERTY OF
L
DENVER, COLORADO

HALLICRAFTERS
MODELS ATCL-9, -10, -11 (Run 1)



HALLICRAFTERS
MODELS ATCL-9, -10, -11 (Run 1)

TRADE NAME	Hallicrafters Model ATCL-9, -10, -11 (Run 1)
MANUFACTURER	Hallicrafter Co., 4401 W. 5th. Ave., Chicago 24, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycles — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator lug of tuning gang. Low side to B-	455KC (400∿Mod)	1000KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	Tuning gang fully open	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

HALLICRAFTERS
MODEL ATCL-9

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Hallicrafters PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■50	150	45A230	AFH2-15		BO15		FP213	TVL-2432	
B	▲30	150								
C2	.047	200	45BS473L2	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C3A	220		*49A027	*PA-113-1	*PC-150		*1408-01	UC-5322	*103C4	
B	2000							DC-522		
C	220							UC-5322		
D	5000							DC-525		
E	220							UC-5322		
C4	.01	600	†	P688-01	D6-103	PTE4S1	GP2-333-103	PT411	6TM-S1	
C5	.047	400	45BR473L4	P488-047		PTE4S47		PT4147	4TM-S47	

* Items C3A, C3B, C3C, C3D, C3E, R5A, R5B and R5C are combined in one unit.
† Part of speaker assembly.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Hallicrafters PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	25B1035	Q13-133	AG-60-Z	B-60	U-48	Volume - note
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

Note : Some Models may use alternate control part #25B1028.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Hallicrafters PART No.	IRC PART No.	NOTES
R2	22KΩ	½	23X20X223K	BTS-22K	
R3	3.3Meg	½	23X20X335K	BTS-3.3Meg	
R4	330Ω	½	23X20X331K	BTS-330	

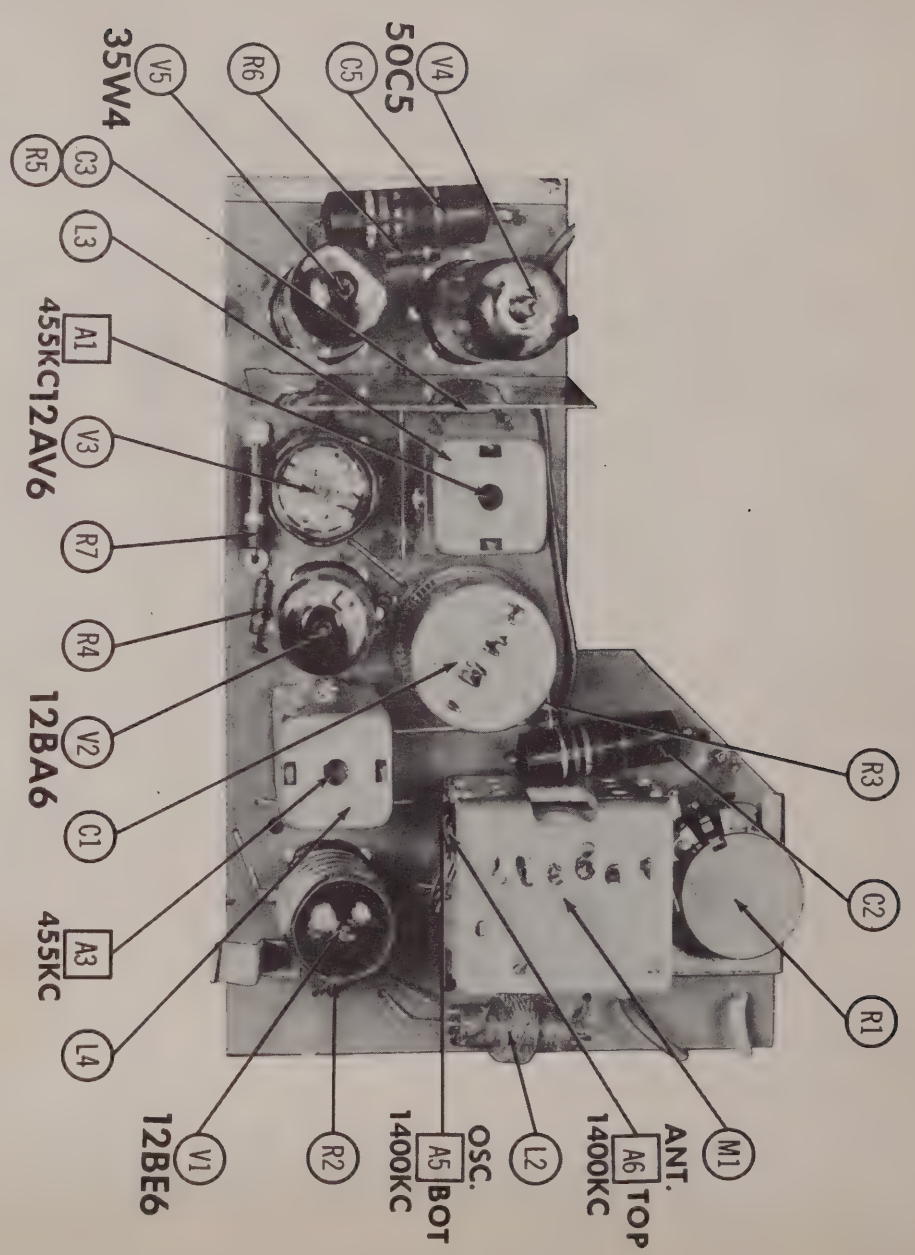
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Hallicrafters PART No.	IRC PART No.	NOTES
R5A	6.8Meg	½	♦49A027	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	
R6	150Ω	½	23X20X151K	BTS-150	
R7	1000Ω	1	23X30X102K	BTA-1000	

♦ Items R5A, R5B, R5C, C3A, C3B, C3C, C3D, C3E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.4KΩ	3.2Ω	165Ω	.3Ω	Part of Spkr.	A-3332	A-3025	RO-302 ①	S-1X ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Hallicrafters PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.2Ω	85C146	ST-113 Mod. P4-X	4A07	

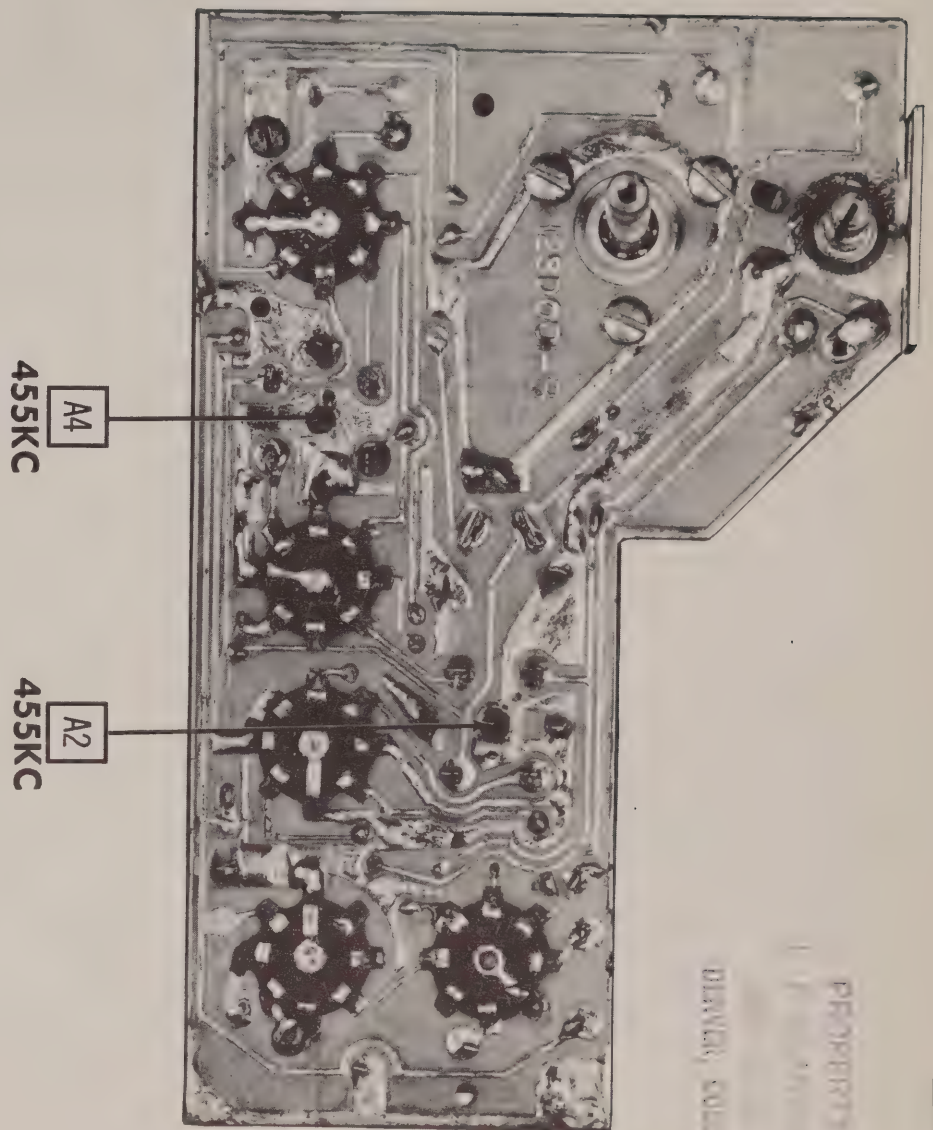
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Hallicrafters PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	2.5Ω		57D189				Includes cabinet back
L2	Osc. Coil	9Ω		51B1613			69-Osc.	Tapped @ .7Ω
L3	Input IF	15Ω	15Ω	50C572	16-6758	BC-352	12-C1	
L4	Output IF	15Ω	15Ω	50C572	16-6758	BC-353	12-C2	

MISCELLANEOUS

ITEM No.	PART NAME	Hallicrafters PART No.	NOTES
M1	Tuning Cap.	48C312	(32-367MMF, 14-105MMF)
M2	Clock Unit	80D135	Includes 3 switches
	Cabinet	116F021	Plastic Model ATCL-9 (brown)
	Cabinet	116F022	Plastic Model ATCL-10 (green)
	Cabinet	116F023	Plastic Model ATCL-11 (white)
	Knob	15D616	Tuning Model ATCL-9 (brown)
	Knob	15D617	Tuning Model ATCL-10 (green)
	Knob	15D618	Tuning Model ATCL-11 (white)
	Knob	15A556	Volume Model ATCL-9 (brown)
	Knob	15A557	Volume Model ATCL-10 (green)
	Knob	15A558	Volume Model ATCL-11 (white)
	Knob	15A559	Clock Model ATCL-9 (brown)
	Knob	15A560	Clock Model ATCL-10 (green)
	Knob	15A561	Clock Model ATCL-11 (white)
	Chassis	130D001	Printed circuit (less parts except sockets, mounting spring, wire, jumpers and terminals.
	Clock Crystal	22C372	

CHASSIS—BOTTOM VIEW



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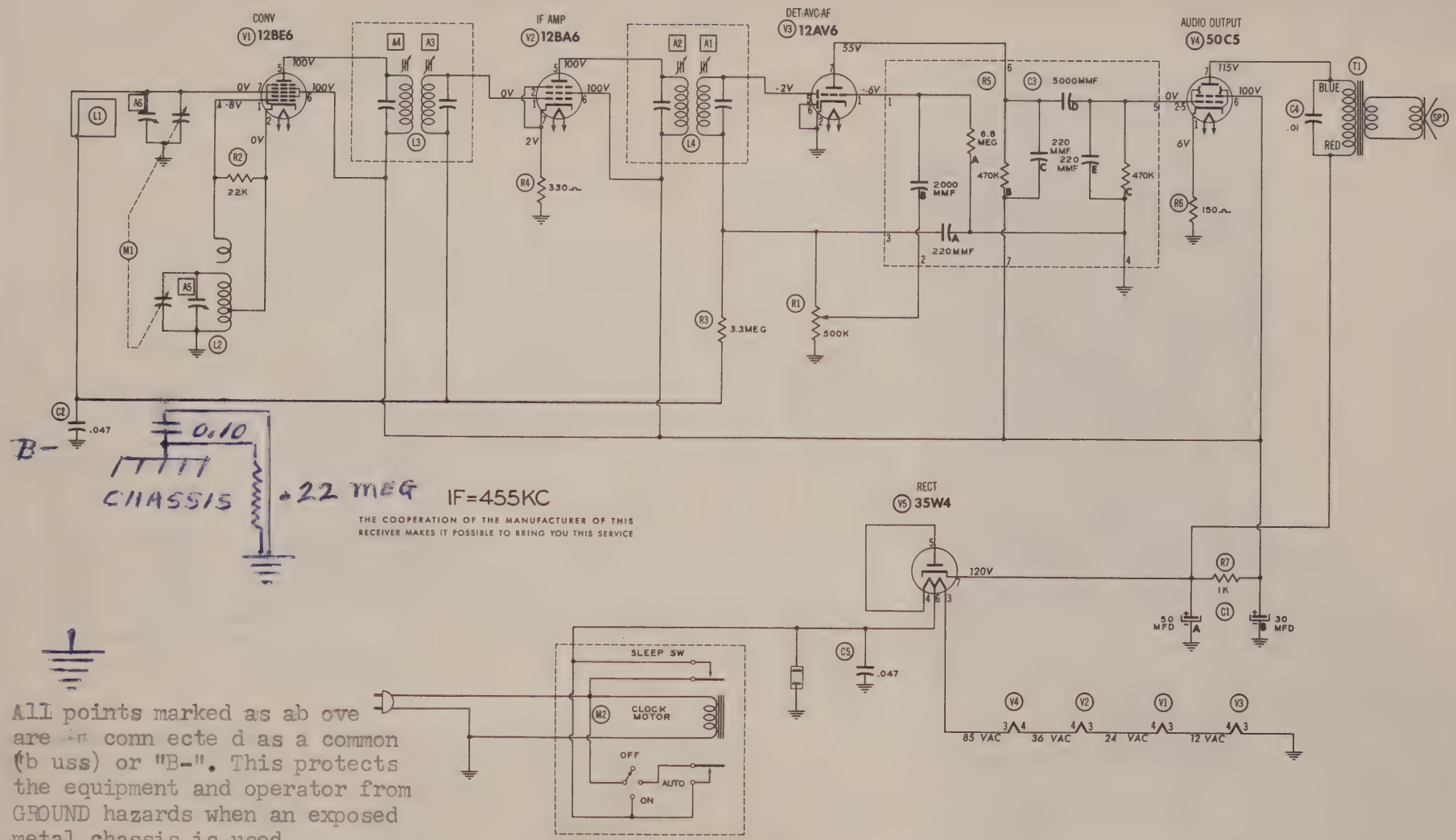

All points marked as ab ove are con necte d as a common (b uss) or "B-". This protects the equipment and operator from GROUND hazards when an exposed metal chassis is used.

The tuning cond enser must be insulated f rom the chassis.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.7Ω	16Ω	32Ω	†1KΩ	†1KΩ	3.8Meg
V 2	12BA6	3.8Meg	330Ω	32Ω	48Ω	†1KΩ	†1KΩ	330Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	16Ω	500KΩ	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	120Ω	48Ω	470KΩ	†1KΩ	†165Ω
V 5	35W4	INF	INF	120Ω	165Ω	165Ω	155Ω	500KΩ

* TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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225-11

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
L i
DENVER, COLORADO

JEWEL
MODEL 5310

TRADE NAME	Jewel Model 5310
MANUFACTURER	Jewel Radio Corp., 900 Passiac Ave., East Newark, N.J.
TYPE SET	Battery Operated Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	1.5 Volts "A" Supply & 67.5 Volts "B" Supply
RATING	250MA @ 1.5 Volts DC & 9.5 MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	532-1680KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed set pointer to the left edge of "5" on the dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to chassis.	455KC (400∿Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	1680KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune to 1500KC signal	"	A6	"

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

JEWEL MODEL 5310

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: JEWEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det-AVC-AF Amp	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: JEWEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	4	150	31-19	PRS150/4		BBR4-150		TC40	TVA-1402	
C2	.05	200	32-64	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C3	10000		35-29	BPD-01	D6-103	TM5S1	GP2-333-103	DC-511	5HK-S1	
C4	3.3		35-32	SI3.3NP0	TCZ-33		NP0K-3R3	ZT-5533	5TCCB-V33	
C5	.003	200	32-36	P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C6A	220									
B	2000									
C	10000		*36-6		*PC-160					
D	100									
E	5000									
C7	5000		35-28	BPD-005	D6-502	TM5D5	GP2-333-502	DC-525	5HK-D5	

*Items C6A, C6B, C6C, C6D, C6E, R6A, R6B, R6C and R6D are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: JEWEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg	½	50-45	Q13-139	AG-66-Z	B-76-S	U-55	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

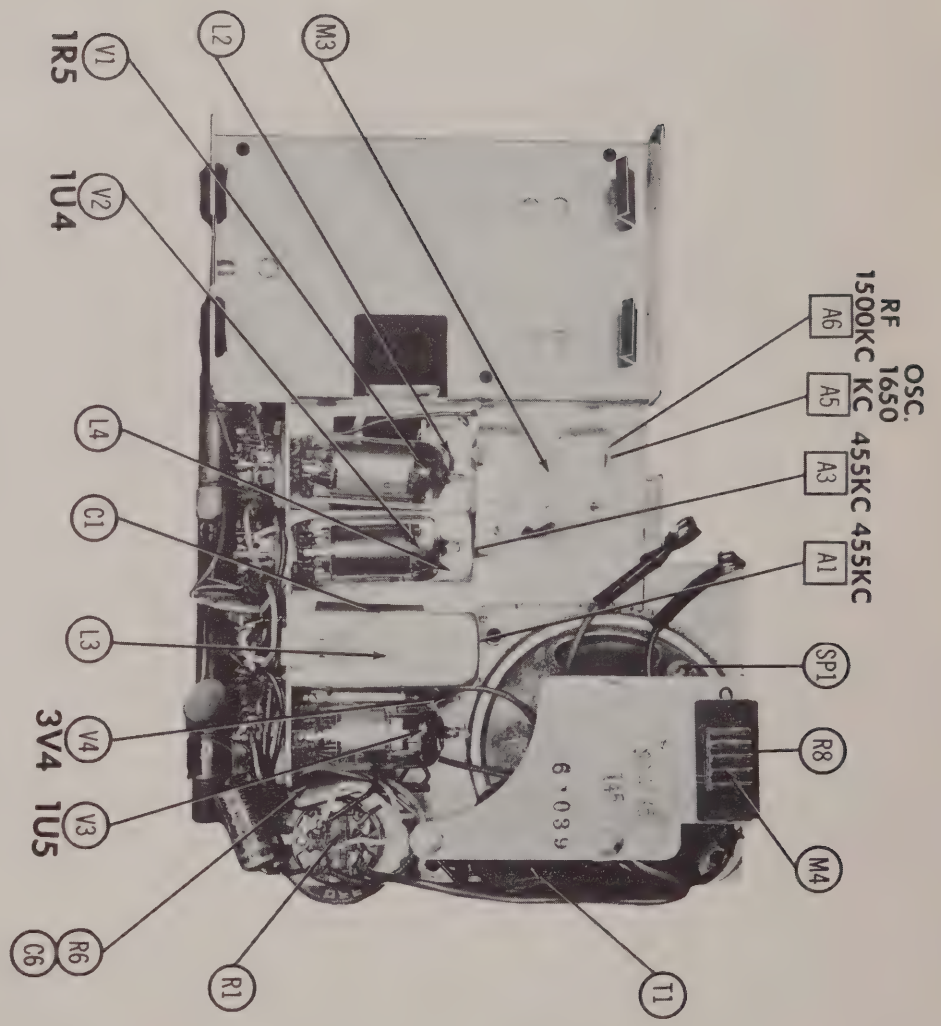
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: JEWEL PART No.	IRC PART No.	NOTES
R2	100KΩ	½	20-104-11	BTS-100K	
R3	15KΩ	½	20-153-11	BTS-15K	
R4	3.3Meg	½	20-335-11	BTS-3.3Meg	
R5	3.3Meg	½	20-335-11	BTS-3.3Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: JEWEL PART No.	IRC PART No.	NOTES
R6A	10Meg	½	* 36-6	BTS-10Meg	
B	4.7Meg	½		BTS-4.7Meg	
C	1Meg	½		BTS-1Meg	
D	3.3Meg	½		BTS-3.3Meg	
R7	820Ω	½	20-821-11	BTS-820	
R8	820Ω	½	20-821-11	BTS-820	

* Items R6A, R6B, R6C, R6D, C6A, C6B, C6C, C6D, C6E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		JEWEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	10KΩ	3.2Ω	600Ω	.36Ω	Part of Spkr.	A-3329				

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	JEWEL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	3"	PM	3.2Ω	55-3			

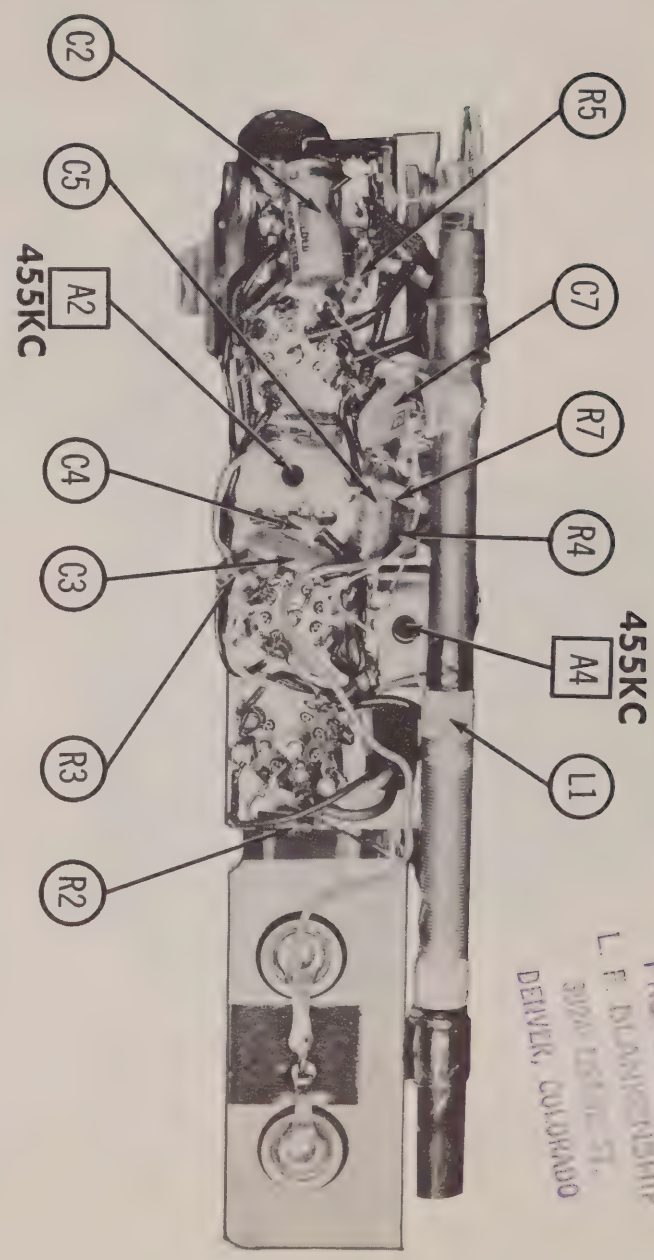
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	JEWEL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. coil	16Ω		62-31				
L2	Osc. coil	2.6Ω	8.5Ω	60-37	14-1073		69-Osc.	
L3	Input IF	25Ω	25Ω	61-23	16-6758	BC-352	12-C1	
L4	Output IF	25Ω	25Ω	61-23	16-6758	BC-353	12-C2	

MISCELLANEOUS

ITEM No.	PART NAME	JEWEL PART No.	NOTES
M3	Tuning Cap.	30-49	(12-240MMF, 12-110MMF)
M4	Switch	65-16	Battery saver (DPST)
	Cabinet	120-102	Polystyrene, in colors
	Knob	122-73	Tuning
	Knob	122-74	Volume, Off/on

CHASSIS—BOTTOM VIEW



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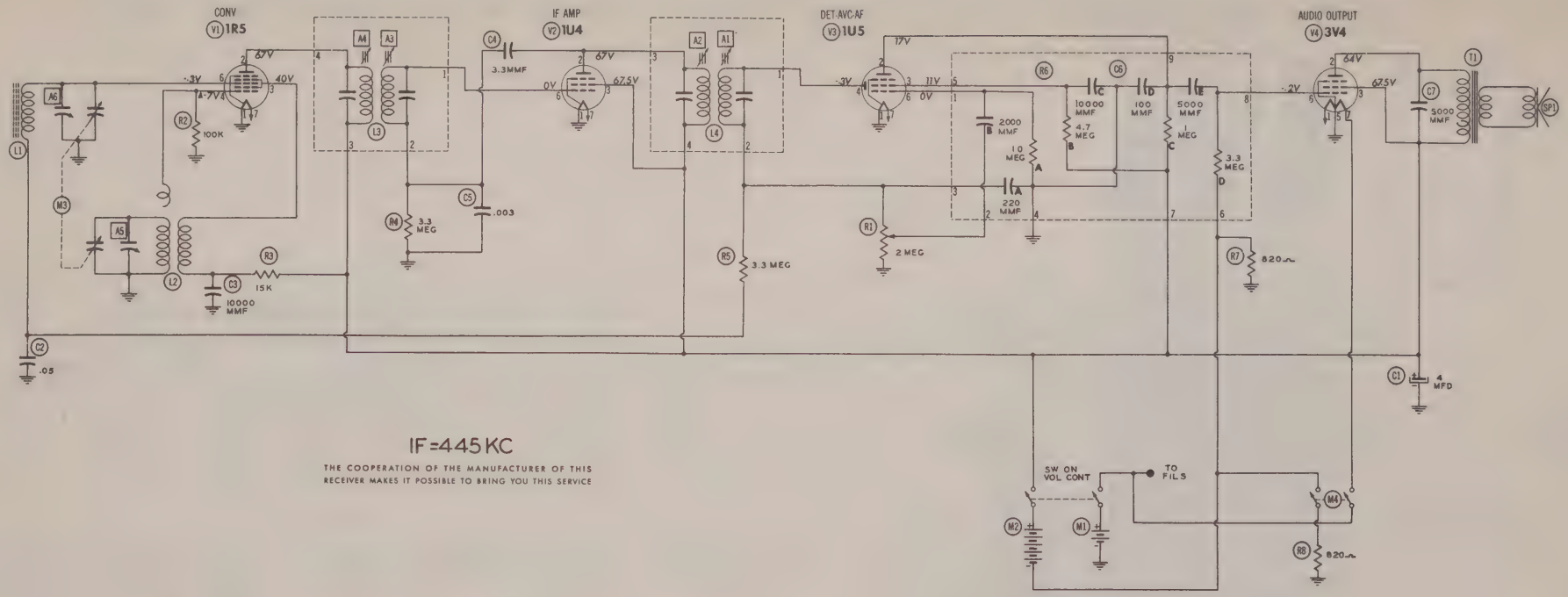
DENVER, COLORADO

JEWEL MODEL 5310



IF=445 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0Ω	†25Ω	†15KΩ	100KΩ	0Ω	5.3Meg	*
V 2	1U4	0Ω	†25Ω	†0Ω	†15KΩ	0Ω	3.3Meg	*
V 3	1U5	0Ω	†1Meg	†4.7Meg	2meg	0Ω	10Meg	*
V 4	3V4	*	†600Ω	†0Ω	820Ω	0Ω	3.3Meg	*

*** DO NOT USE OHMMETER TO MEASURE FIALMENT RESISTANCE**
† MEASURED FROM B+ LINE

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1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
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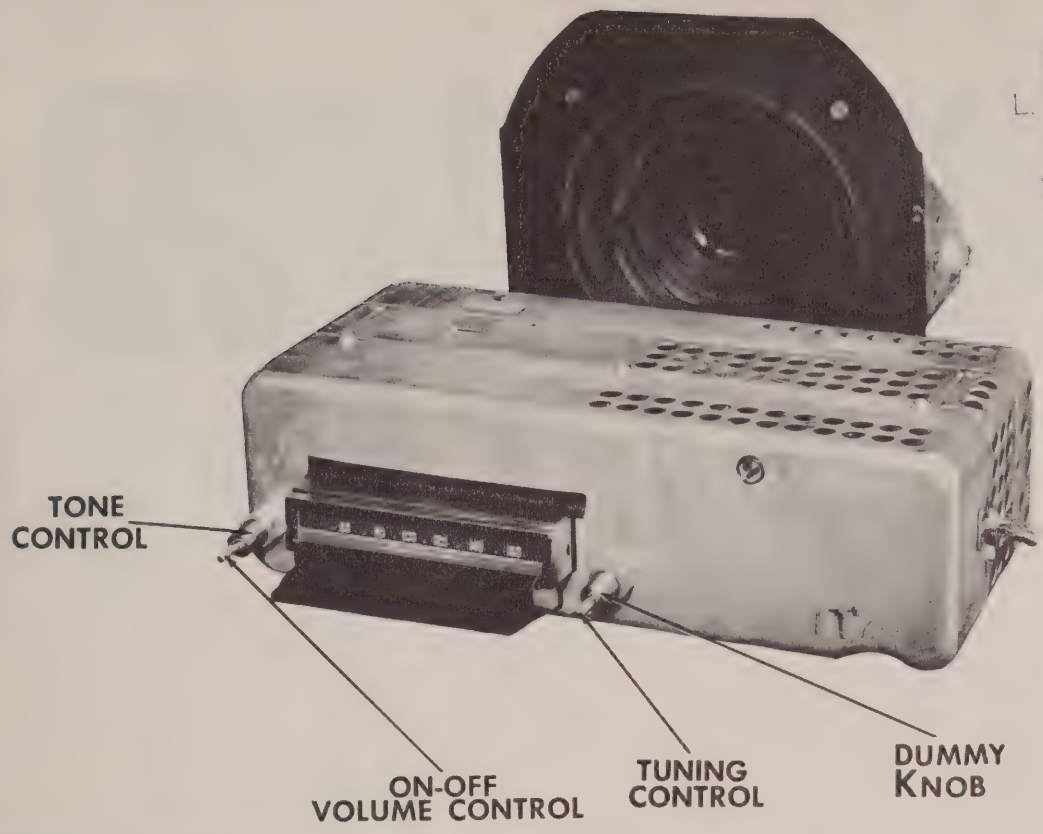
3924 [illegible]
DENVER, COLORADO

OLDSMOBILE
MODEL 982990



OLDSMOBILE
MODEL 982990

TRADE NAME	Oldsmobile Model 982990 (For 1953 Oldsmobile Cars)
SUPPLIER	Oldsmobile Motors, Div. of General Motors, Lansing, Mich.
TYPE SET	Battery Operated Custom Built Automobile Receiver
TUBES (Seven)	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12BF6 Det.-AVC-AF Amp., (2) 12V6GT Audio Output, 0Z4 Rectifier
POWER SUPPLY	12 Volt Storage Battery — RATING 2.8 Amp. @ 12 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2) Low side to chassis.	260KC (400~Mod)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.	68MMF	High side to antenna receptacle. Low side to chassis.	1615KC	"	"	A5, A6, A7	Check mechanical setting of A8. The oscillator core (A8) should be 1 25/32" from the mounting end of the coil form. Adjust A5, A6 and A7 for maximum deflection.
3.	"	"	1000KC	Tune to 1000KC signal	"	A9, A10	Adjust for maximum deflection.
4.	"	"	1615KC	High frequency end stop.	"	A6, A7	"
5.	"	"	1000KC	Tune to 1000KC signal	"		With pointer adjustment screw set pointer on the first "0" of "100" on the dial scale.
6.	To set push buttons pull push button to the right and out. Manually tune to the desired station, then press push button all the way in to lock. Repeat above procedure for remaining push buttons.						
7.	With radio installed in car and antenna fully extended tune to a weak station between 600 and 1000KC and adjust A7 for maximum volume.						

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Oldsmobile PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det-AVC-AF amp.	12BF6	12BF6	7BT	
V5	Audio Output	12V6GT	12V6GT	7S	
V6	Audio Output	12V6GT	12V6GT	7S	
V7	Rectifier	0Z4	0Z4	4R	

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Oldsmobile PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■20	400	M908	AFH3-120		CO99		FP345.8	TVL-3678	
B	▲20	400								
C	20	25								
C2	.05	200	6512	P288-05	DF-503	PJ2P5		PT415	2TM-S5	
C3	15	500								Note 1
C4	39	500	G390	1469-00004		5R5Q4		MCB223	MS-44	
C5	180		7257424							
C6	.05	400	6512	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C7	10	500	G100	1468-00001	D6-100	5W5Q1	GP1K-100	MC215	1FM-41	
C8	220	500	G221	1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C9	.002	600	6528	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C10	.01	400	6510	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C11	.01	400	6510	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C12	.005	600	6531	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C13	.1	400	6513	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C14	100		G101	BPD-0001	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C15	.003	1000	H302	P1088-003		PTE16D3		PT1623	MB-D3	
C16	.007	1600	H702	P1688-007		PTE16D7		PT1627	MB-D7	
C17	.5	100	6592	P185-5		MP2P5		RF480	68P20	
C18	.47	100	7257906	P185-5		MP2P5		RF480	68P20	

Note 1. Some Models use 10MMF in this application (Part #G100)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Oldsmobile PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg		7263005				UF26A	Tone (Panel)
B	300KΩ		Not Req.				UR354-T74	Volume (Rear)
C	Shaft		Not Req.				EB214	Attach to R1A
D	Switch		Not Req.				US26T	Attach to R1B

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Oldsmobile PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	2.2Meg	½	A225	BTS-2.2Meg	
R3	68Ω	1	1215558	BTS-68	
R4	15KΩ	1	B153	BTA-15K	
R5	330KΩ	½	A334	BTS-330K	
R6	1Meg	½	A105	BTS-1Meg	
R7	15KΩ	2	C153	BTB-15K	
R8	220Ω	½		BTS-220	Note
R9	1Meg	½	A105	BTS-1Meg	
R10	47KΩ	½	A473	BTS-47K	
R11	1000Ω	½	A102	BTS-1000	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Oldsmobile PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R12	820KΩ	½	1214561	BTS-820K	
R13	2200Ω	½	A222	BTS-2200	
R14	1Meg	½	A105	BTS-1Meg	
R15	27KΩ	1	B273	BTA-27K	
R16	47KΩ	½	A473	BTS-47K	
R17	360Ω	1	7234563	BTA-360	
R18	1800Ω	2		BTB-1800	
R19	15KΩ	1	B153	BTA-15K	
R20	820Ω	1	1216152	BTA-820	

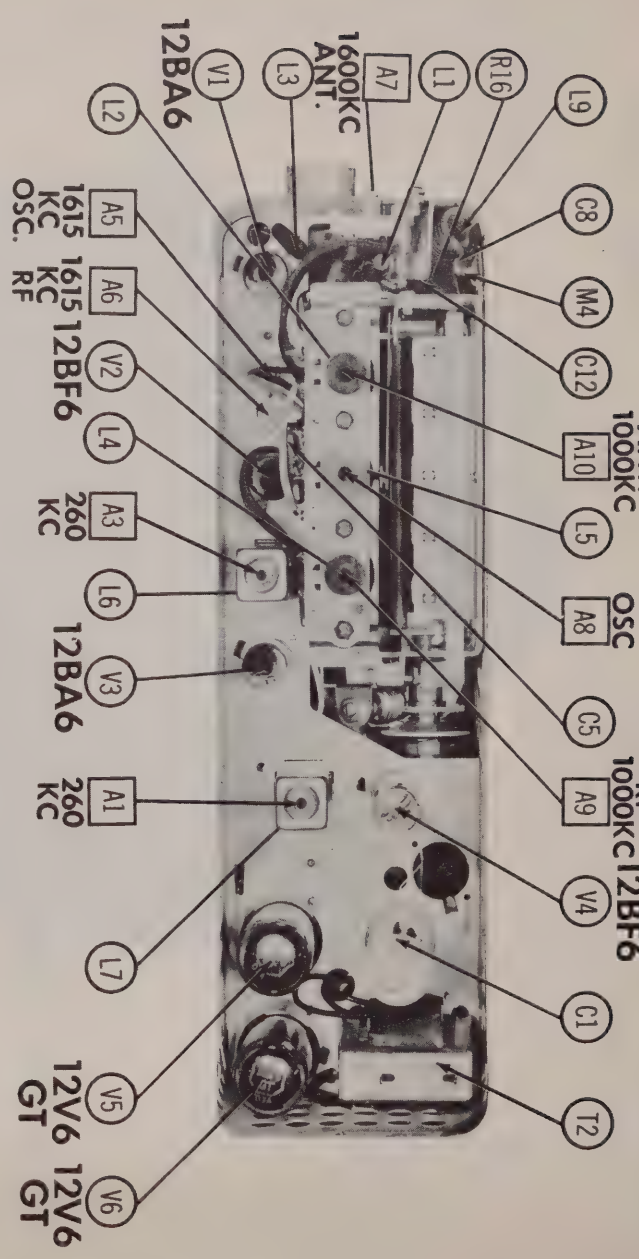
Note: Some models may use a 150Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Oldsmobile PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	12VCT @1.6A	414VCT .048ADC			6065		P-2978 ①		

① Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (INPUT)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	Oldsmobile PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T2	.18KΩ CT				6061				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Oldsmobile PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T3	7.8KΩ CT	4Ω	368Ω CT	.34Ω	6063	A-3852	A-2936	RO-110	S-15X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Oldsmobile PART No.	JENSEN PART No.	QUAM PART No.	
SP1	8"	PM	4Ω	7263090	ST-115 Mod. P8-V	8A21	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Oldsmobile PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. coupling	.7Ω		7255738			4612	9 Microhenries
L2	Ant. coil	10Ω		7258914				
L3	RF coupling	4.6Ω		7240251	19-3036	TV-180	6176	33 Microhenries
L4	RF coil	10Ω		7258914				
L5	Osc. coil	1Ω	4.4Ω	7263071				
L6	Input IF	39Ω	38Ω	1219508	16-6752	BC-350	12-H1	
L7	Output IF	30Ω	32Ω	1218726	16-6754	BC-354	12-H6	
L8	Fil. Choke	0Ω		1217846				
L9	Fil. Choke	0.		1217846				
L10	Vibrator Hash Choke	0Ω		7263095				150 Microhenries

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA				NOTES
				Oldsmobile PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12V	115∿	8550	6330	G-874	6330	

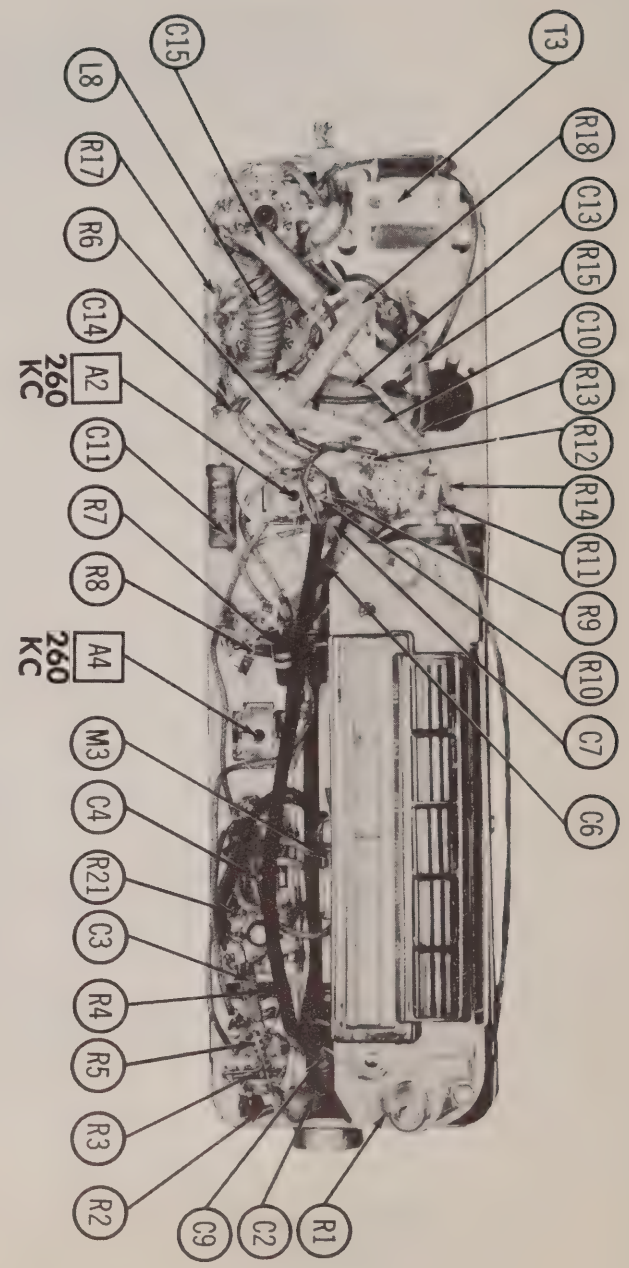
FUSES

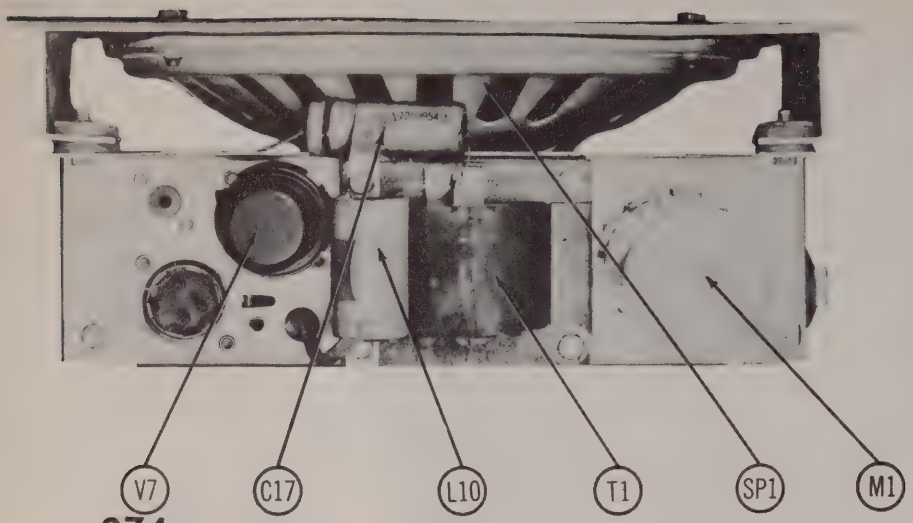
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Oldsmobile PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	7AG	7½A	7263227	1220177	30307.5 (7AG-7½A)	155009	AGW 7½A	HRH

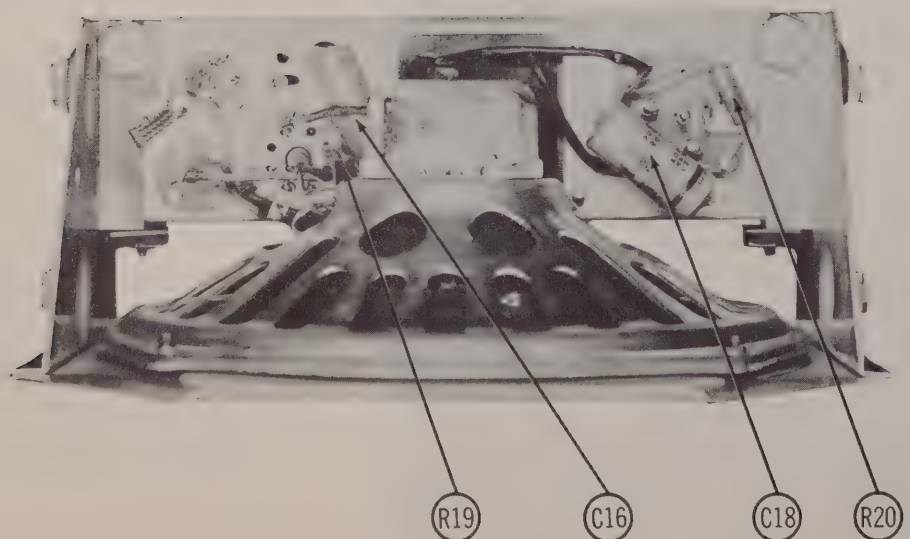
MISCELLANEOUS

ITEM No.	PART NAME	Oldsmobile PART No.	NOTES
M3	Dial Light	433	#57
M4	Spark Plate	1212278	
A7	Trimmer Cap.	7262997	Antenna trimmer
A5, A6	Trimmer Cap.	7242454	Dual - RF & Osc. trimmer
	Knob	7269818	Volume & tuning - 2 used
	Knob	7260192	Tone & dummy - 2 used
	Dial Glass	7263003	
	Push button	1220208	Includes complete slide assembly - 5 push buttons

CHASSIS—BOTTOM VIEW




V7
C17
L10
T1
SP1
M1
0Z4


R19
C16
C18
R20

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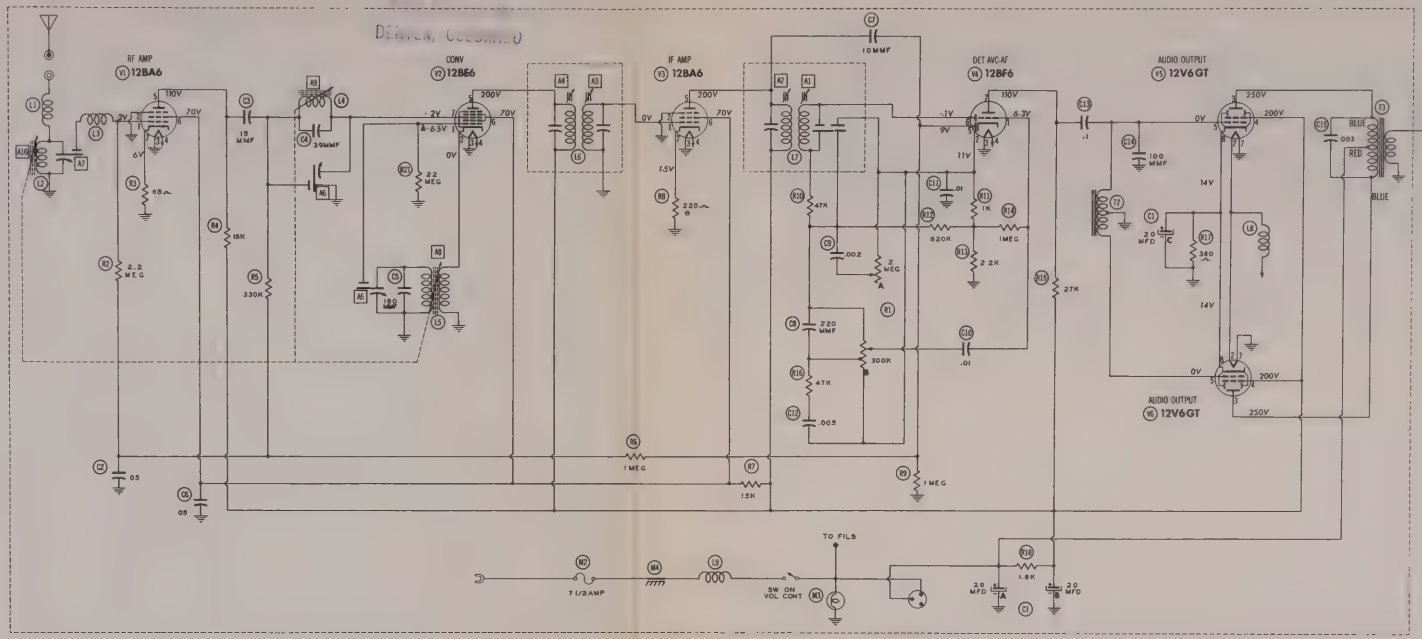

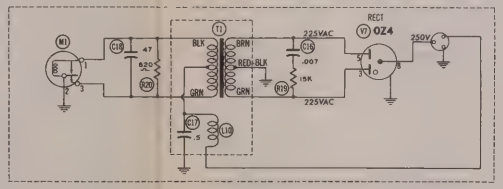

IF=260KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BA6	4.25Meg	0Ω	3Ω	0Ω	117KΩ	117KΩ	56Ω	
V 2	12BE6	13KΩ	4.4Ω	3Ω	0Ω	11.8KΩ	117KΩ	3.3Meg	
V 3	12BA6	26Ω	0Ω	3Ω	0Ω	11.9KΩ	117KΩ	130Ω	
V 4	12BF6	1Meg	3.3KΩ	3Ω	0Ω	1Meg	570KΩ	135KΩ	
V 5	12V6GT	DNT	0Ω	†185Ω	†1.8KΩ	900Ω	DNT	3Ω	360Ω
V 6	12V6GT	DNT	3Ω	†185Ω	†1.8KΩ	900Ω	DNT	0Ω	390Ω
V 7	0Z4	0Ω	DNT	330Ω	DNT	345Ω	DNT	DNT	1.5Meg

* TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V7.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

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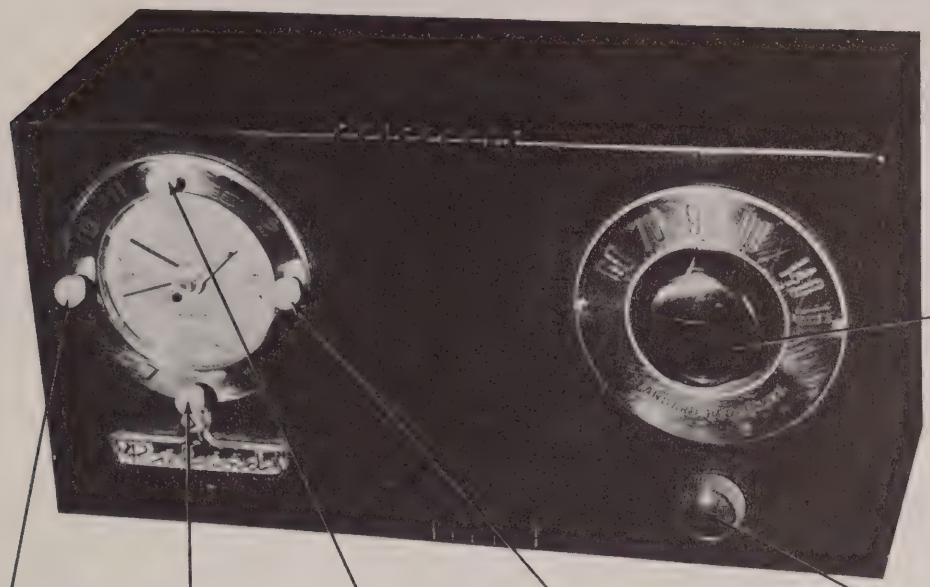

ROLAND
MODEL 5C2

TRADE NAME	Roland Model 5C2
MANUFACTURER	Roland Radio Corp., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.22 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator plates of tuning gang. Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001 MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

ROLAND MODEL 5C2

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		ROLAND PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det. -AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ROLAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150		PRS150/50-30-20		EDL-44215		3N532	TVA-3451	Red
B	40	150								Blue
C	20	150								Yellow
C2	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C3	220	500		1468-00025	D6-251	5W5T25	GP2K-221	MCE240	1FM-325	
C4	.01	600		P688-01	D6-103	PTE4S1	GP2-333-103	PT611	6TM-S1	
C5	220	500		1468-00025	D6-251	5W5T25	GP2K-221	MCE240	1FM-325	
C6	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C7	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C8	.01	600		689ZX-01		PTE6S1		PT611	6TM-S1	
C9	.1	400		489ZX-1		PTE4P1		PT401	4TM-P1	
C10	50									

CONTROLS

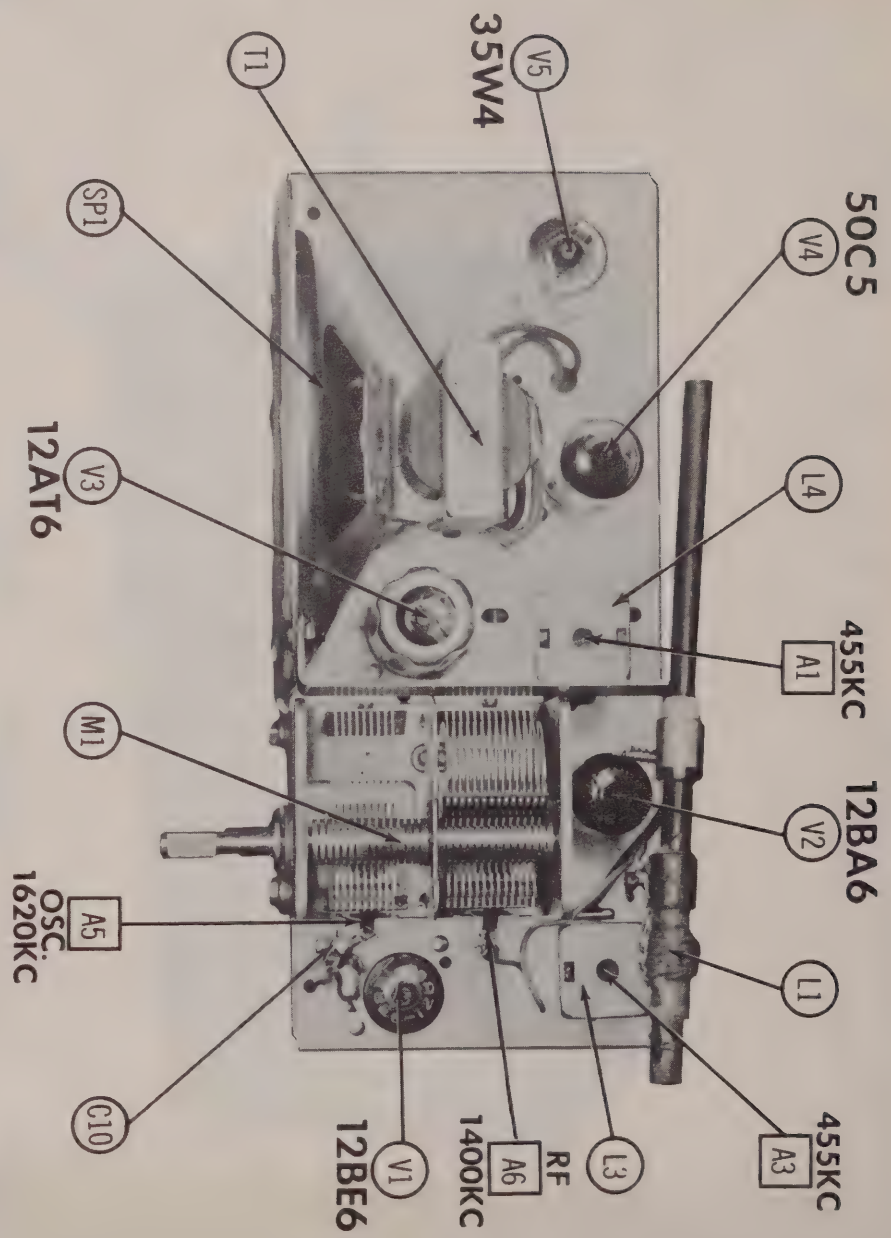
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ROLAND PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	VC1005	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ROLAND PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	
R3	220Ω	½		BTS-220	
R4	2.2Meg	½		BTS-2.2Meg	
R5	4.7Meg	½		BTS-4.7Meg	
R6	220KΩ	½		BTS-220K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ROLAND PART No.	IRC PART No.	
R7	470KΩ	½		BTS-470K	
R8	150Ω	1		BTS-150	
R9	2200Ω	1		BTA-2200	
R10	330Ω	1		BTA-330	
R11	18Ω	½		BTS-18	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		ROLAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.4KΩ	3.3Ω	240Ω	.6Ω	Part of Spkr.	A-3332 ①	A-3025 ①	RO-302 ①	S-IX ①	① Bend mounting tabs down, file out slot, mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ROLAND PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	SP-45	ST-113 Mod. P4-X	4A07	

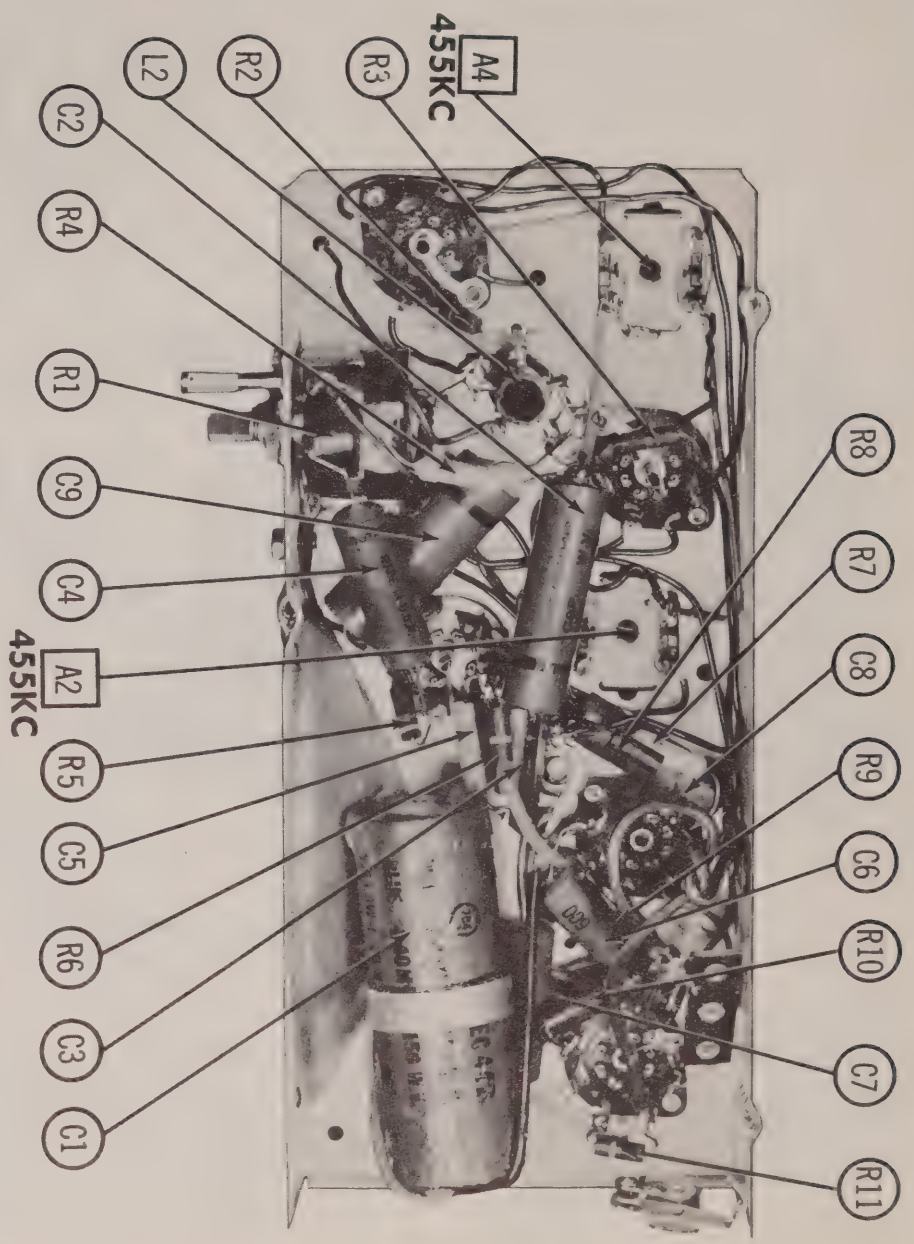
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ROLAND PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.9Ω						
L2	Osc. Coil	.6Ω	6Ω		14-1073		69-Osc.	
L3	Input If	22Ω	22Ω	LF-50	16-6758	BC-352	12-C1	
L4	Output If	22Ω	22Ω	LF-50	16-6758	BC-353	12-C2	

MISCELLANEOUS

ITEM No.	PART NAME	ROLAND PART No.	NOTES
M1	Tuning cap		(49-462MMF, 20-180MMF)

CHASSIS—BOTTOM VIEW



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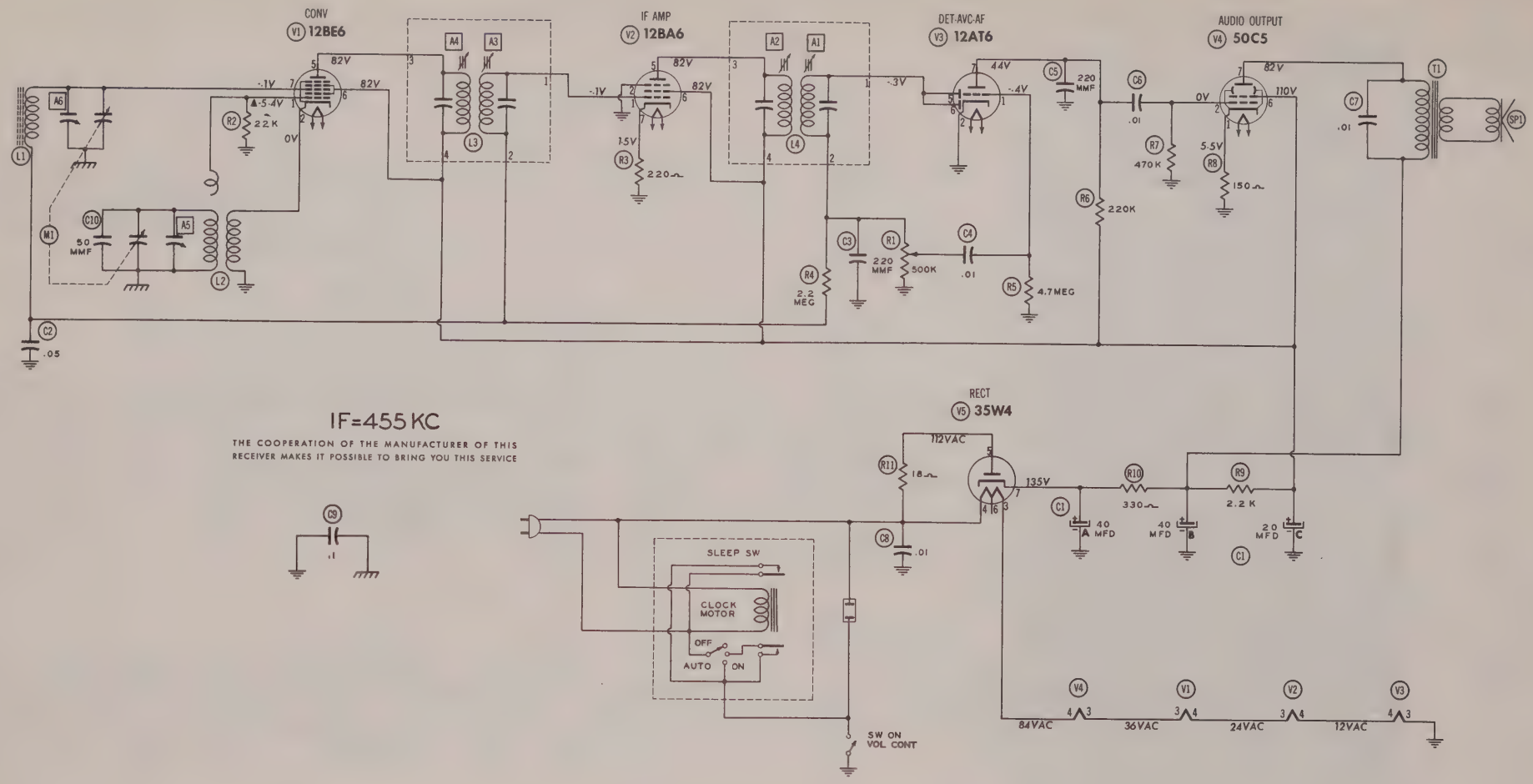
ROLAND MODEL 5C2



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	0Ω	36Ω	25Ω	†2.5KΩ	†2.5KΩ	2.7Meg
V 2	12BA6	2.7Meg	■	25Ω	13Ω	†2.5KΩ	†2.5KΩ	220Ω
V 3	12AT6	4.7Meg	■	0Ω	13Ω	500KΩ	500KΩ	†222KΩ
V 4	50C5	150Ω	470KΩ	36Ω	84Ω	470KΩ	†2.5KΩ	†570Ω
V 5	35W4	50KΩ	INF	84Ω	120Ω	138Ω	112Ω	50KΩ

† MEASURED FROM PIN 7 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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225-14

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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SILVERTONE
MODELS 3052, 3053 (Ch. 132.053)

SILVERTONE
MODELS 3052, 3053 (Ch. 132.053)

TRADE NAME	Silvertone Models 3052, 3053 (Ch. 132.053)
SUPPLIER	Sears, Roebuck & Co., 629 S. Homan Ave., Chicago, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver with 3 Speed Automatic Record Changer
TUBES (Six)	Types 12SK7 RF Amp., 12SA7 Conv., 12SK7GT IF Amp., 12SQ7 Det.-AVC-AF Amp., 35L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycles RATING .28 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed set the left edge of the pointer even with the calibration hole in the left side of the dial plate. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 8 (grid) of 12SA7 (V2). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	50MMF	High side to external antenna connection. Low side to ground.	1400KC	1400KC	"	A5, A6, A7	"
3.	"	"	600KC	Tune to 600KC signal	"		Bend slotted plates of antenna and RF rotor plates on tuning gang for maximum deflection.
4.	Repeat steps 2 and 3.						

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE SIMILAR V-M MODEL 950 - PHOTOFACT SET 107 - FOLDER 13 OR RECORD CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

SILVERTONE MODEL 3052

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Silvertone PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	12SK7	12SK7GT	8N	
V2	Converter	12SA7	12SA7	8R	
V3	IF Amplifier	12SK7	12SK7GT	8N	
V4	Det. -AVC-AF Amp.	12SQ7	12SQ7	8Q	
V5	Audio Output	35L6GT	35L6GT	7S	
V6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING · CAP.	RATING · VOLT	REPLACEMENT DATA: Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	N24249	PRS150/80-40		EDL8415		TCD498	R1274	Red
B	50	150								Blue
C2	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	50	500		1468-00005	D6-500	5W5Q5	GP1K-500	MC225	1FM-45	
C4	220			SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C5	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C6	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C7	220			SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C8	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C9	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C10	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C11	.05	200		P288-05		PJ2S5		PT415	2TM-S5	
C12	.05	400		P488-05		PJ4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	N40801	Q13-133X	AK-82	BT-67-S	UT-430	Volume tapped at 170KΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	NOTES
R2	2200Ω	½		BTS-2200Ω	
R3	22KΩ	½		BTS-22K	
R4	6.8Meg	½		BTS-6.8Meg	
R5	1Meg	½		BTS-1Meg	
R6	68Ω	½		BTS-68	
R7	3.3Meg	½		BTS-3.3Meg	
R8	330KΩ	½		BTS-330K	
R9	150Ω	½		BTS-150	
R10	470KΩ	½		BTS-470K	
R11	1000Ω	2		BTB-1000	
R12	15Ω	1½		BTS-15	
R13	150Ω	1½		BTS-150	
R14	330K	½		BTS-330K	
R15	33K	½		BTS-33K	

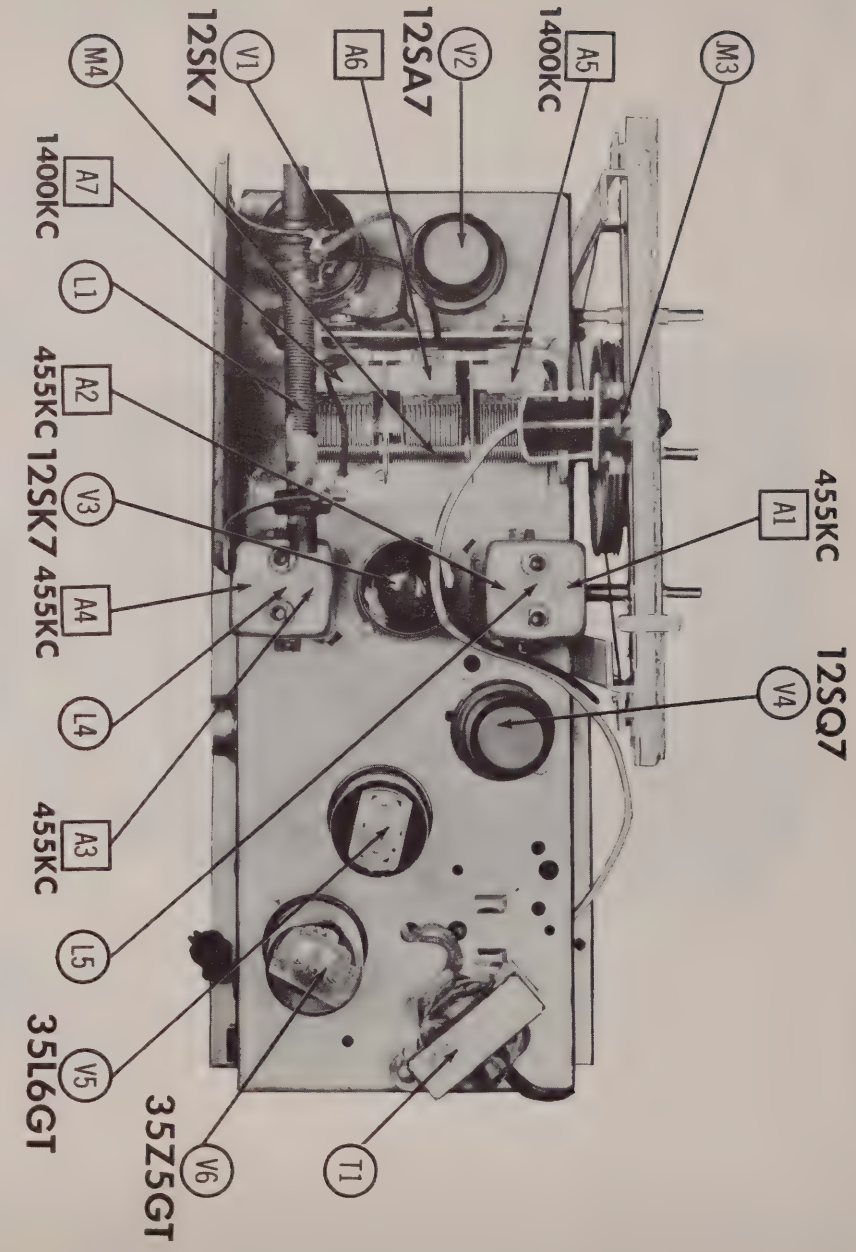
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	3.5KΩ	3.8Ω	110Ω	.4Ω	N-23931-1	A-3856	A-3018 ①	RO-302	S-1X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: Silvertone PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	5 x 7"	PM	3.8Ω	N-24817	57J9	57A1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Silvertone PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	0Ω	.4Ω	N25657-1				
L2	RF Coil	2.1Ω	8Ω	N23706-1	14-1072	BC-382 *	70-RF	
L3	Osc. Coil	.7Ω	7Ω	N23751-1	14-1074		70-Osc. †	
L4	Input If	18Ω	18Ω	N25728-1	16-6666	BC-368	112-C1	
L5	Output IF	18Ω	18Ω	N25729-1	16-6667	BC-371	112-C4	

* Drill mounting hole.
† Disregard tap on secondary winding.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: Silvertone PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1	K3797	GC-AG-J	G-AG	WC36B	A56U	43	0-2 or S-2	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

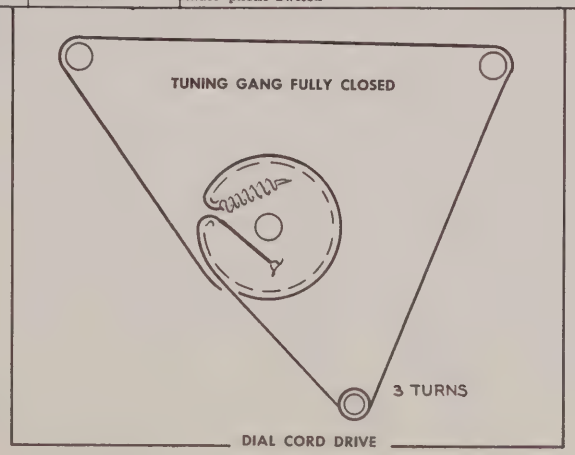
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

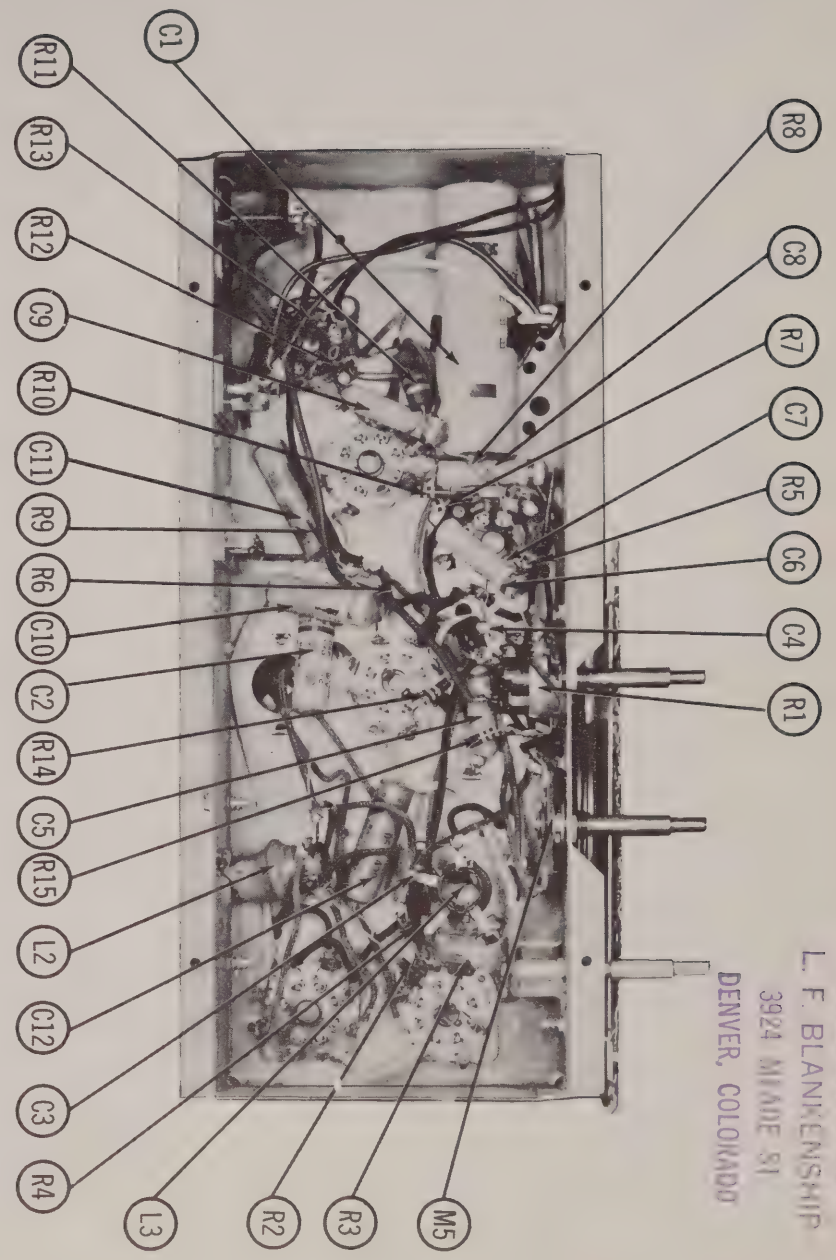
ITEM No.	REPLACEMENT DATA: Silvertone PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M2		W-3AGA or W-3AGS	S-642 or S-652	

MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M3	Dial light	N19351	#47
M4	Tuning Cap	N40761	(43-437MMF, 26-395MMF, 23-180MMF)
M5	Switch	N40781	Function selector
	Back Cover	N23484	
	Bottom Cover	N23578	Record changer
	Escutcheon	N40775-1	and dial assembly
	Escutcheon	N40811	Part of N40775-1
	Dial scale	N40803	Part of N40775-1(glass)
	Knob	N40799-1	Off-on volume and tuning (2used)
	Knob	N40799-2	Radio-phono switch



CHASSIS—BOTTOM VIEW



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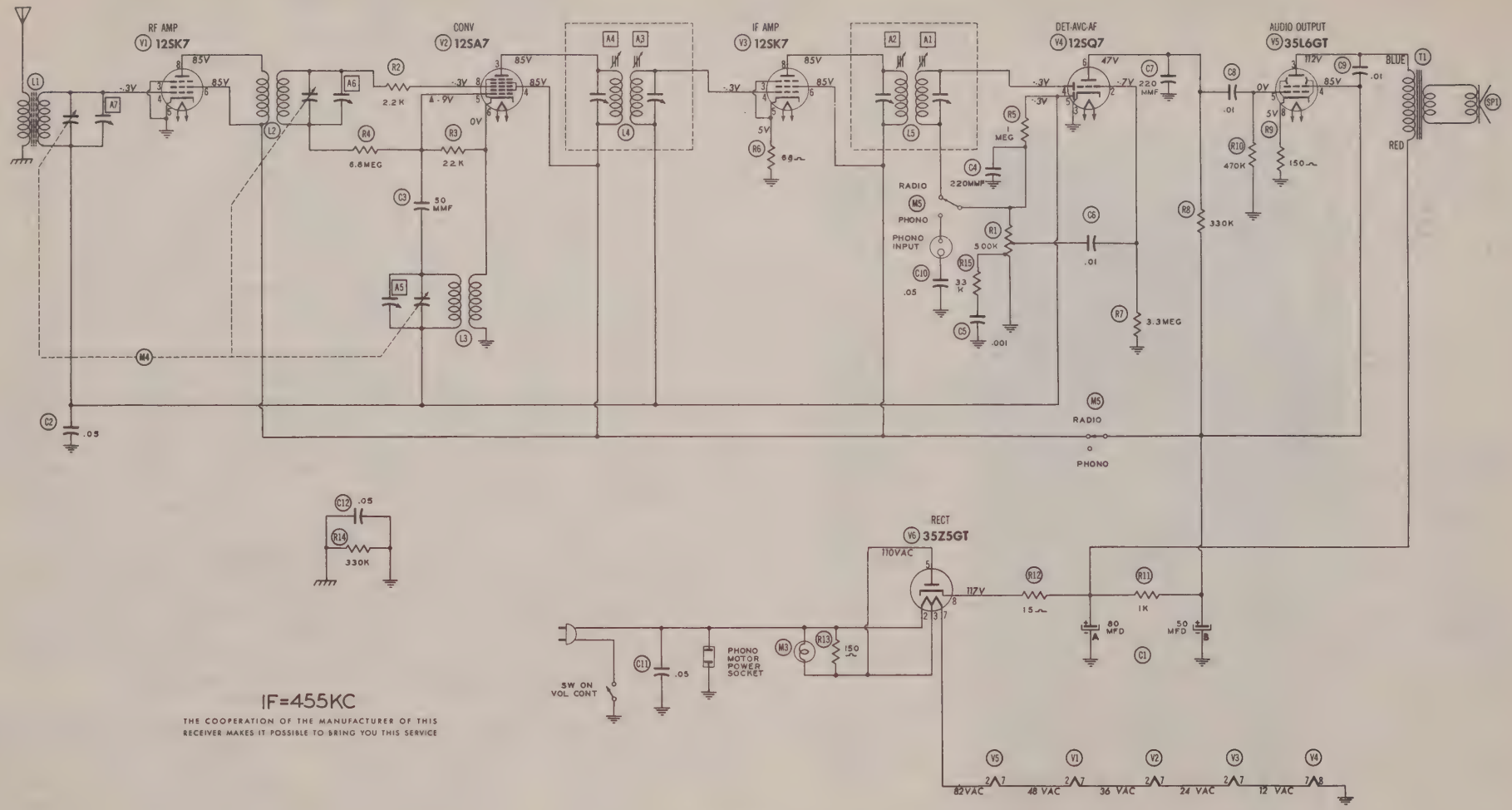
SILVERTONE MODEL 3052



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SK7	350KΩ	70Ω	0Ω	1.1Meg	0Ω	†1KΩ	48Ω	†1KΩ
V 2	12SA7	350KΩ	48Ω	†1KΩ	†1KΩ	22KΩ	.7Ω	32Ω	1.1Meg
V 3	12SK7	350KΩ	32Ω	68Ω	1.1Meg	68Ω	†1KΩ	14Ω	†1KΩ
V 4	12SQ7	350KΩ	3.3Meg	0Ω	400KΩ	1.1Meg	†330KΩ	1Ω	0Ω
V 5	35L6GT	INF	132Ω	†135Ω	†1KΩ	470KΩ	INF	70Ω	150Ω
V 6	35Z5GT	INF	200Ω	190Ω	INF	190Ω	†1Ω	132Ω	400KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V6

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225-15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

SILVERTONE MODELS 3376, 3377
(Ch. 456.200-111, -112, -113, -114, -115, -121, -122, -123, -124, -125)

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MODEL 3376

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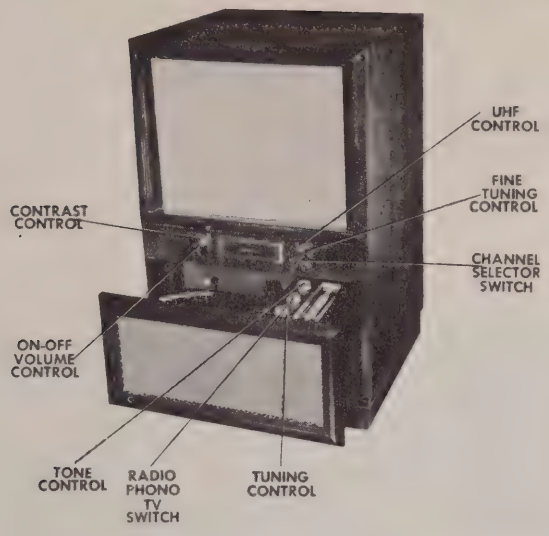
DATE 12-53 SET 225 FOLDER 16

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

SILVERTONE MODELS 3376, 3377 (Ch. 456.200-111, -112, -113, -114, -115, -121, -122, -123, -124, -125)



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SILVERTONE MODELS 3376, 3377 (Ch. 456.200-111, -112, -113, -114, -115, -121, -122, -123, -124, -125)

SILVERTONE MODEL 3376 (Ch.456.200-113)

TRADE NAME	Silvertone Models 3376, 3377	CHASSIS	TUNERS VHF	TUNERS UHF
		456.200-111, 456.200-121	PMC-57006	PMC-57007
		456.200-112, 456.200-122	PMC-57006	PMC-57008
		456.200-113, 456.200-123	PMC-57006	PMC-57009
		456.200-114, 456.200-124	PMC-57006	Not Used
		456.200-115, 456.200-125	PMC-57006	Not Used
SUPPLIER	Sears Roebuck & Co., 925 S. Homan Ave., Chicago, Ill.			
TYPE SET	TV-AM-Phono Combination Receiver			
TUBES	(TV) Twenty-two (AM Radio) Two			
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING 1.92 Amp. @ 117 Volts AC		
TUNING RANGE	Channels 2 thru 13VHF, 14 thru 83UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) AM Radio 535-1700KC, AM IF 455KC			

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FOR SERVICE INFORMATION ON RECORD CHANGER, SEE V-M MODEL 950, PHOTOFACT SET 107, FOLDER 13 ALSO SUPPLEMENT SET 131, FOLDER 17 OR RECORD CHANGER MANUAL CM-3.

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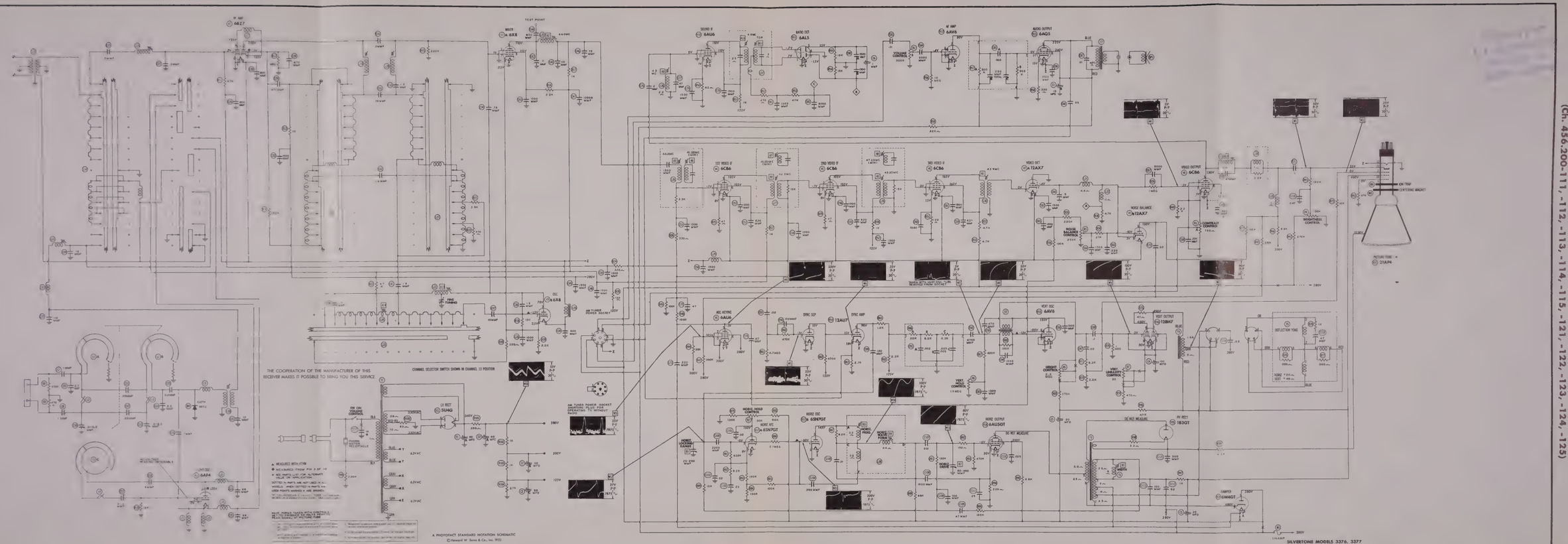
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
CHANNEL SELECTION SWITCH SHOWN IN CHANNEL 13 POSITION
TEST POINT
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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SILVERTONE MODELS 3376, 3377
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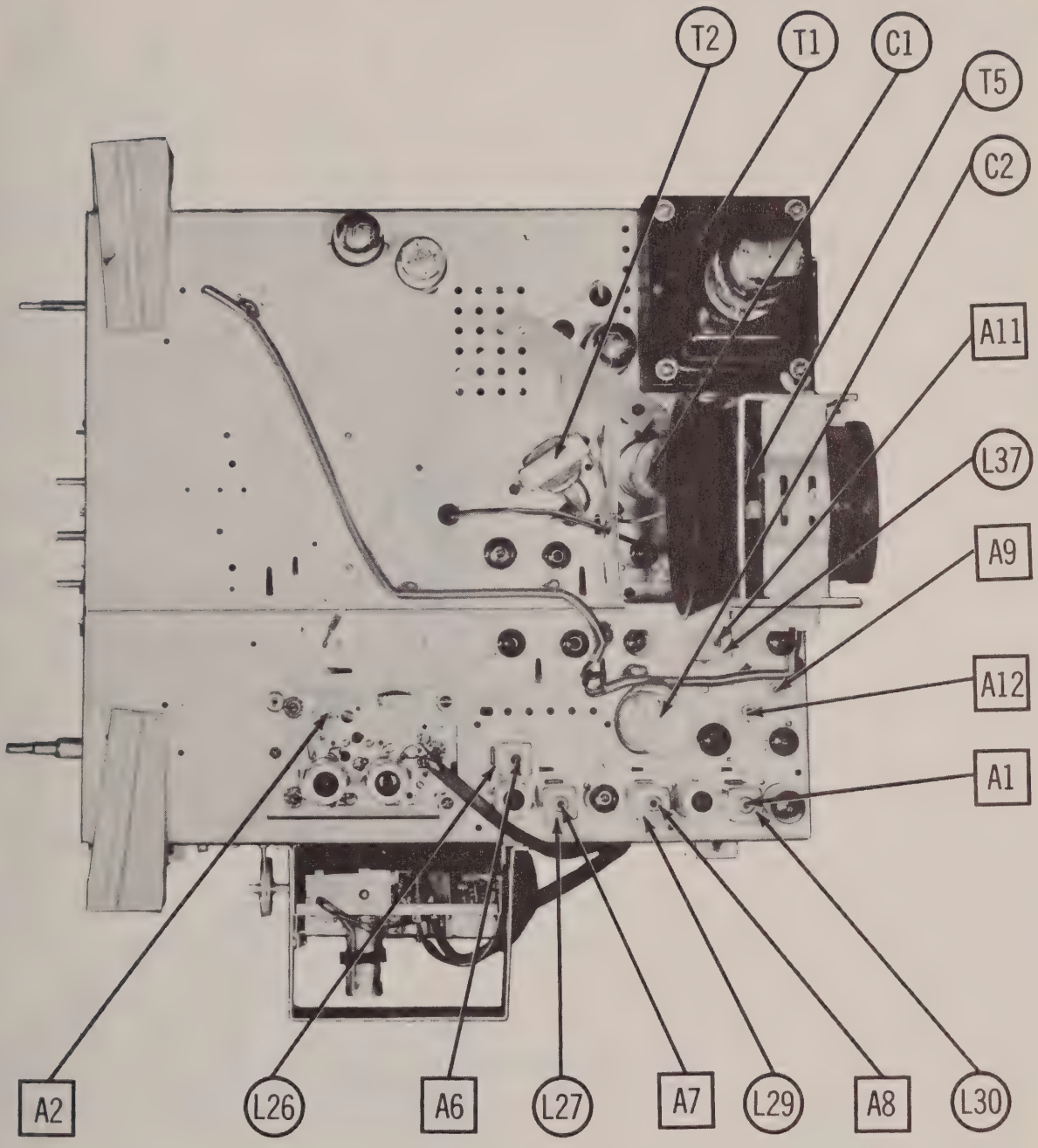
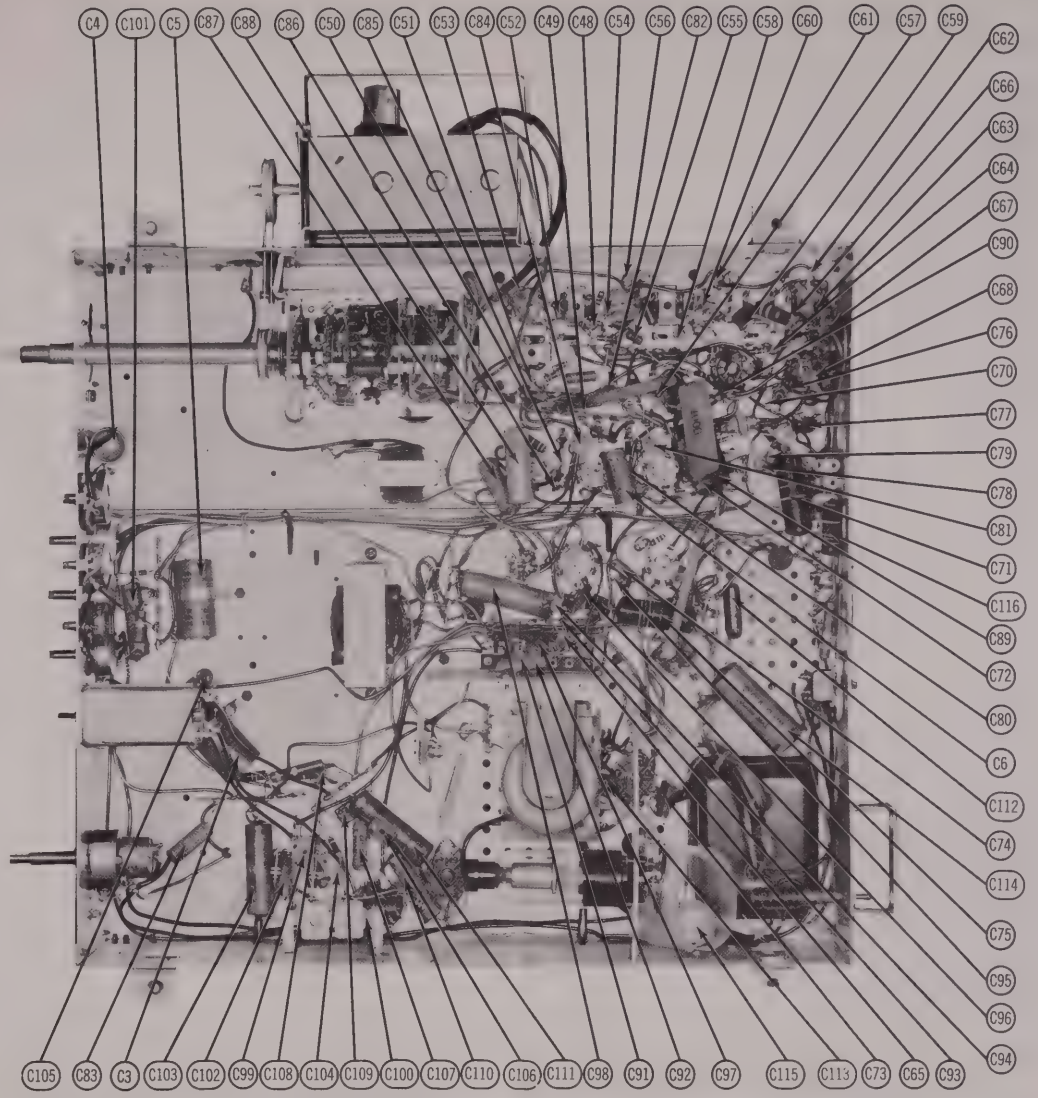


For Tube Location See Tube Placement Chart Page 5

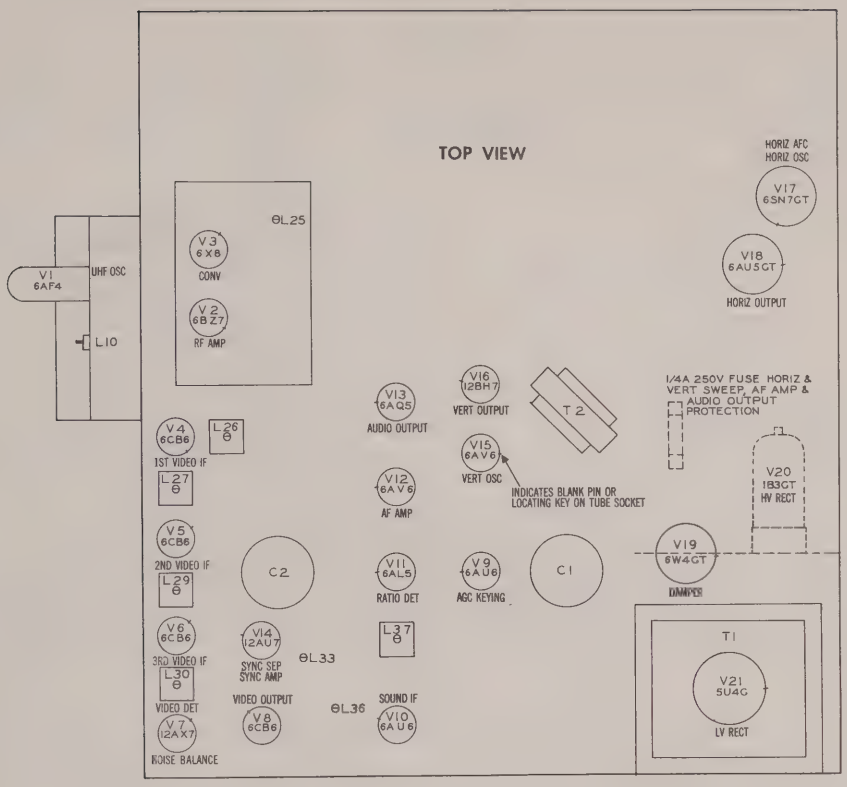
TV CHASSIS TOP VIEW

SET 225 FOLDER 16



TV CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V21

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6, V7, V8 (V1 UHF only)
No pic, no sound, has snow - V2, V3, V4
No pic, has sound, has raster - V8, V22
Has pic, no sound - V10, V11, V12, V13
Overloaded picture - V9

SYNC FAILURE
No vert. sync - V14, V15, V16
No horiz. sync - V14, V17
No vert. or horiz. sync - V14

SWEEP FAILURE
No raster, has sound - V17, V18, V19, V20, V22, Fuse (M1)
No vertical deflection - V15, V16
Poor vert. linearity or foldover - V15, V16
Poor horiz. linearity or foldover - V17, V18, V19
Narrow picture - V17, V18, V19, V20, V21
Vert. off freq. - V14, V15, V16
Horiz. off freq. - V14, V17

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, V17, from its socket.
Set the noise balance control fully clockwise.

VIDEO IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube. Low side to chassis.	43.9MC (unmod)	7 or 13	DC probe to point (A). Common to chassis.	A1	Adjust for maximum deflection. Alternate generator output to maintain 1 to 1.5 volts at VTVM.
2.	"	"	44.0MC	"	"	A2	Connect a 1KΩ resistor from pin 1 (grid) of 6CB6 (V4) to the AGC line (lug 8 on tuner terminal board). Adjust A2 for maximum deflection. Remove 1KΩ resistor.
3.	"	"	44.0MC	"	"	A3	Adjust for maximum deflection.
4.	"	"	42.5MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	54.35MC	"	"	A5	Adjust for maximum deflection.
6.	"	"	41.25MC	"	"	A6	Adjust for MINIMUM deflection.
7.	"	"	41.25MC	"	"	A7	Adjust for MINIMUM deflection.
8.	"	"	47.25MC	"	"	A8	Adjust for MINIMUM deflection.
9.	Repeat steps 3, 4 and 5.						
10.	Repeat step 1.						

OVERALL VIDEO IF RESPONSE CHECK

Connect the negative lead of a 3 volt battery to the AGC lead. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Direct	High side to an ungrounded tube shield floating over a converter tube. Low side to chassis.	44MC (10MC Swp)	41.25MC 42.25MC 45.75MC 47.25MC	7 or 13	Vert. Amp. to point (A). Low side to chassis.		Check for response similar to Fig. 1. Retouch A1 thru A5 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	.01MFD	High side to pin 1 (grid) of 6CB6 (V8). Low side to chassis.	4.5MC (Unmod.)	7 or 13	DC probe to point (B). Common to chassis.	A9, A10	Adjust for maximum deflection.
13.	"	"	"	"	DC probe to point (C). Common to chassis.	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	.01MFD	High side to pin 1 (grid) of 6CB6 (V8). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	7 or 13	Vert. Amp. to point (B). Low side to chassis.	A9, A10	Disconnect stabilizer capacitor C6. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
13.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A11	Reconnect stabilizer capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
14.	.01MFD	High side to pin 1 (grid) of 6CB6 (V8). Low side to chassis.	4.5MC (Unmod.)	7 or 13	DC probe thru detector (Fig. 4) of pin 11 (cathode) of picture tube Common to chassis.	A12	Adjust for MINIMUM deflection.

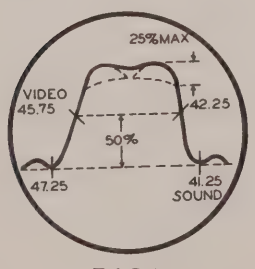


FIG.1

FIG.2

FIG.3

TV ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT

Connect the bias battery as under overall video IF response check.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A13	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should be at 50%.
16.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check for sound marker placement as in Fig. 5. If necessary make SLIGHT compromise adjustment of A13 for best marker placement on all high band channels.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
17.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A14	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should be at 50%.
18.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check low band channels for correct sound marker placement as in Fig. 5. If necessary make SLIGHT compromise adjustment of A14 for best marker placement on all low band channels.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

VHF RF ALIGNMENT

The RF section of the VHF tuner and the UHF tuner have been properly aligned at the factory and are very stable. Alignment of these portions of the receiver should not be required in the field.

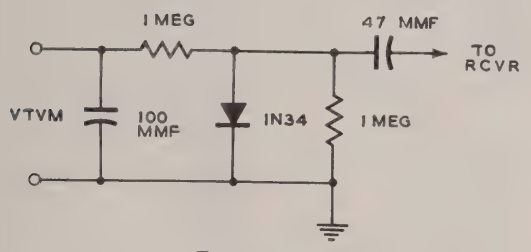


FIG. 4

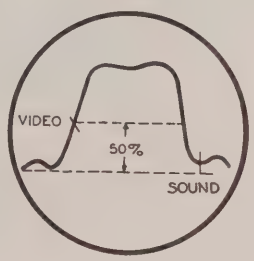


FIG. 5

RADIO ALIGNMENT INSTRUCTIONS

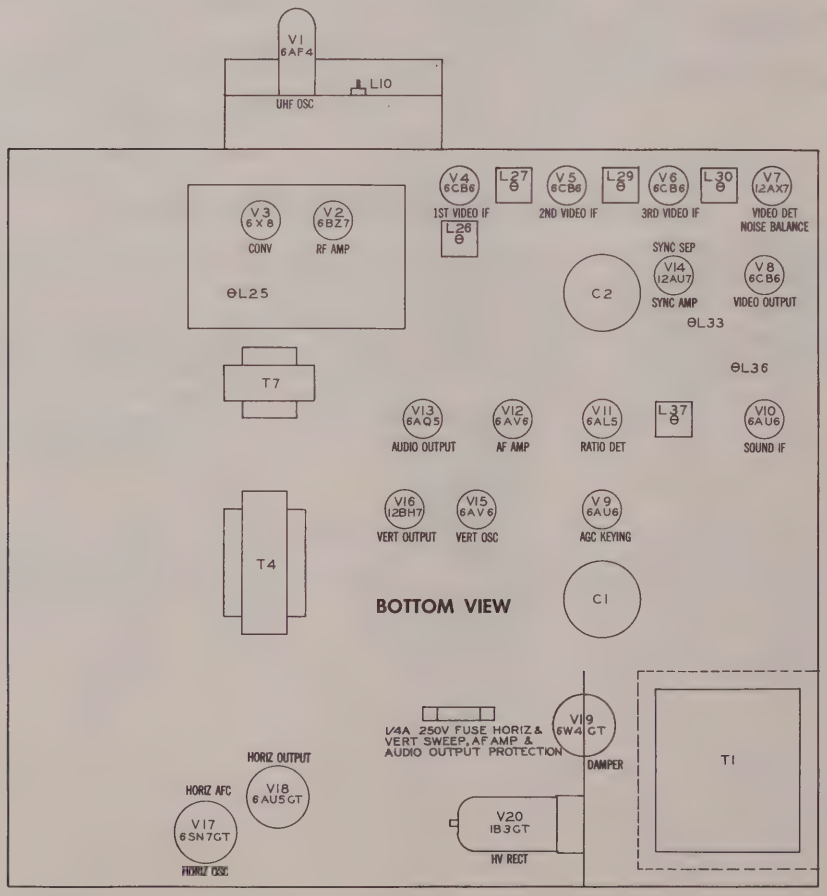
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
With tuning gang fully closed, set dial pointer exactly 5/8" from left edge of dial back plate.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
19.	.1MFD	High side to pin 7 (grid) of 6BE6 (V23). Low side to chassis.	455KC (400\Mod)	Radio	Tuning gang fully open	Across voice coil	A15, A16 A17, A18	Adjust for maximum deflection.
20.		Loop	1500KC	"	Set pointer 4 1/8" from left edge of dial backplate	"	A19	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
21.		"	600KC	"	Set pointer 1½" from left edge of dial plate	"	A20, A21	"
22.		"	600KC	"	Tune to 600KC signal	"	A20	Adjust for maximum deflection while rocking gang through 600KC signal
23.		"	1500KC	"	Set dial pointer 4 1/8" from left edge of dial backplate	"	A21	Adjust for maximum output.

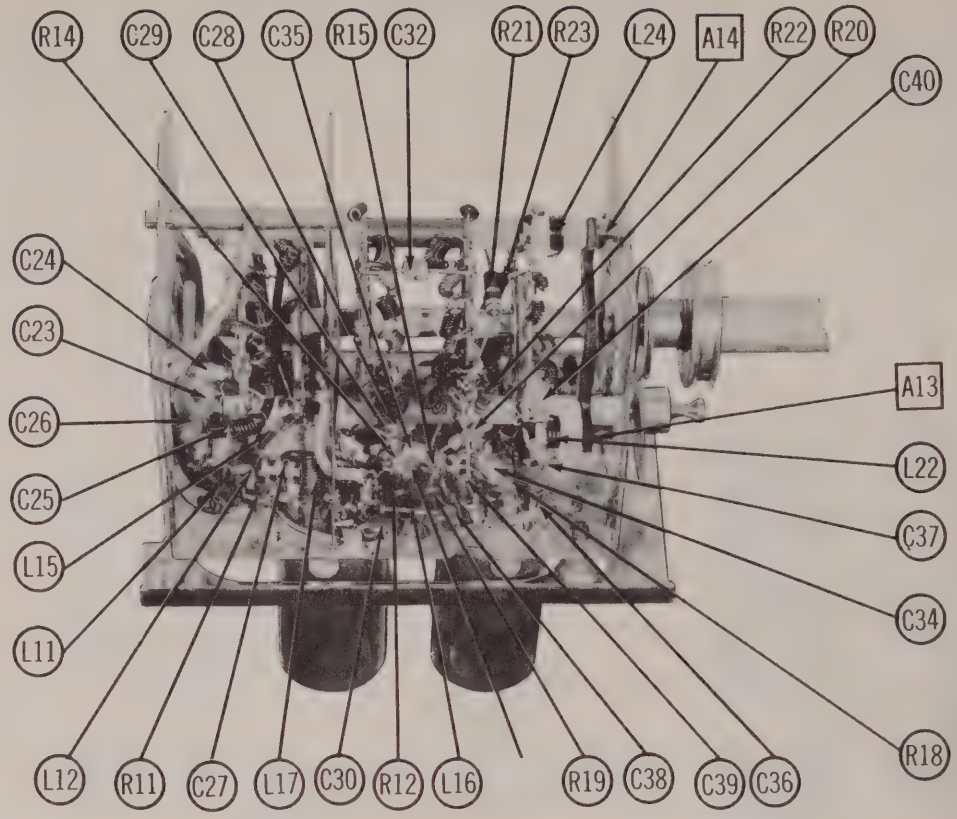
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	† ⏏2. 3KΩ	12KΩ	⏏. 2Ω	. 3Ω	0Ω	12KΩ	† ⏏2. 3KΩ		
V 2	6BZ7	† 1. 2KΩ	440KΩ	INF	. 1Ω	0Ω	INF	105KΩ	0Ω	
V 3	6X8	0Ω	15KΩ	† 7KΩ	0Ω	. 2Ω	2. 2KΩ	220KΩ	† 4. 5KΩ	† 3. 3K
V 4	6CB6	100KΩ	47Ω	0Ω	. 2Ω	† 3. 4KΩ	† 3. 4KΩ	0Ω		
V 5	6CB6	100KΩ	47Ω	. 2Ω	0Ω	† 3. 2KΩ	† 3. 3KΩ	0Ω		
V 6	6CB6	0Ω	150Ω	. 2Ω	0Ω	† 9. 6KΩ	† 9. 6KΩ	0Ω		
V 7	12AX7	0Ω	4. 7KΩ	0Ω	.2Ω	. 2Ω	† 110KΩ	100KΩ	4. 7KΩ	0Ω
V 8	6CB6	1Meg	80Ω	. 1Ω	0Ω	† 8KΩ	† 2. 2KΩ	80Ω		
V 9	6AU6	† 20KΩ	†1. 2KΩ	INF	INF	200KΩ	† 250Ω	† 1. 2KΩ		
V 10	6AU6	2. 2Ω	0Ω	. 1Ω	0Ω	† 3. 2KΩ	† 3. 2KΩ	82Ω		
V 11	6AL5	INF	INF	0Ω	. 1Ω	10KΩ	0Ω	10KΩ		
V 12	6AV6	10Meg	0Ω	0Ω	. 1Ω	0Ω	0Ω	† 500KΩ		
V 13	6AQ5	500KΩ	330Ω	0Ω	. 1Ω	† 1. 4KΩ	† 1KΩ	INF		
V 14	12AU7	† 470KΩ	5Meg	0Ω	. 1Ω	. 1Ω	† 6. 2KΩ	† 470KΩ	2. 7KΩ	0Ω
V 15	6AV6	1. 4Meg	0Ω	. 1Ω	0Ω	0Ω	600KΩ	#1. 1Meg		
V 16	12BH7	2. 4KΩ	1Meg	3. 4KΩ	. 1Ω	. 1Ω	2. 4KΩ	1Meg	3. 4KΩ	0Ω
V 17	6SN7GT	1. 1Meg	† 60KΩ	300KΩ	250KΩ	† 75KΩ	0Ω	. 1Ω	0Ω	
V 18	6AU5GT	470KΩ	. 1Ω	220Ω	0Ω	#26Ω	INF	0Ω	† 7KΩ	
V 19	6W4GT	#26Ω	INF	220KΩ	INF	†250Ω	200KΩ	#20Ω	#20Ω	
V 20	1B3GT	PINS 1-8 HAVE INF RESISTANCE								TOP CAP #536Ω
V 21	5U4G	INF	20KΩ	INF	88Ω	INF	90Ω	INF	20KΩ	
V 22	21AP4	0Ω	12KΩ	PIN 8 47KΩ	PIN 10 #1KΩ	PIN 11 130KΩ	PIN 12 . 1Ω			

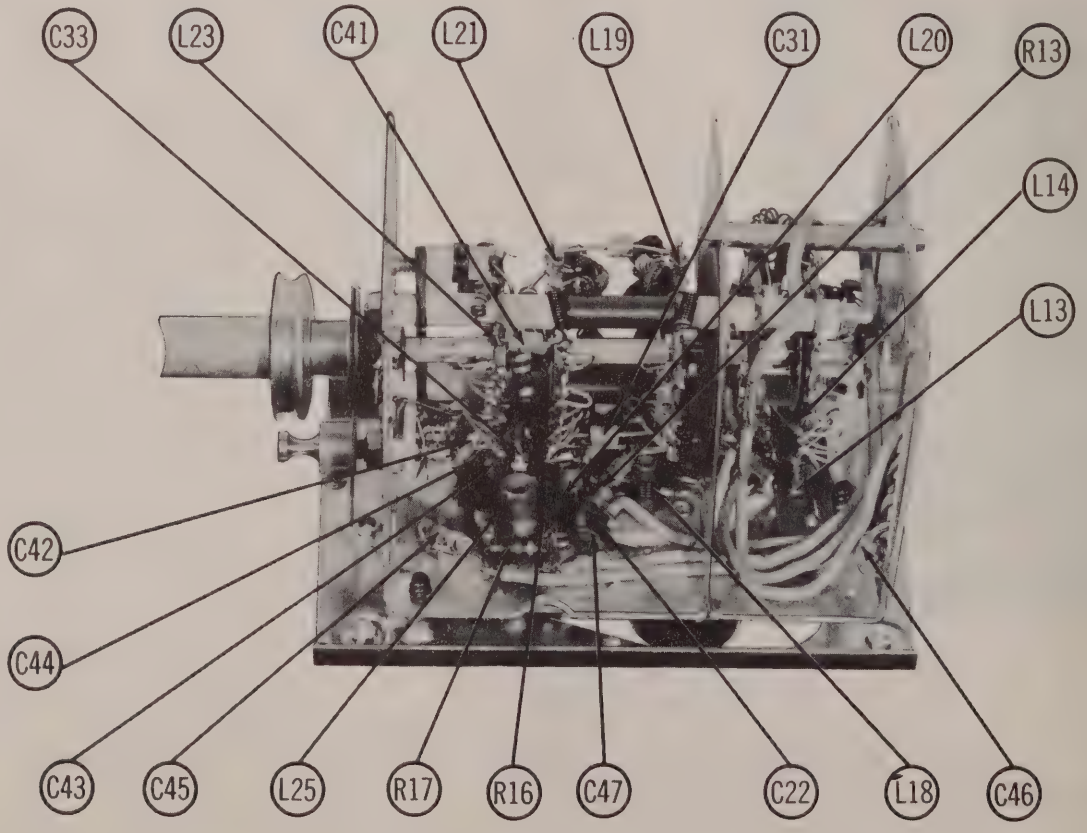
† MEASURED FROM PIN 8 OF V21.
# MEASURED FROM PIN 3 OF V19.
⏏ MEASURED IN UHF POSITION.
ALL MEASUREMENTS IN VHF POSITION UNLESS OTHERWISE SPECIFIED.



TUBE PLACEMENT CHART

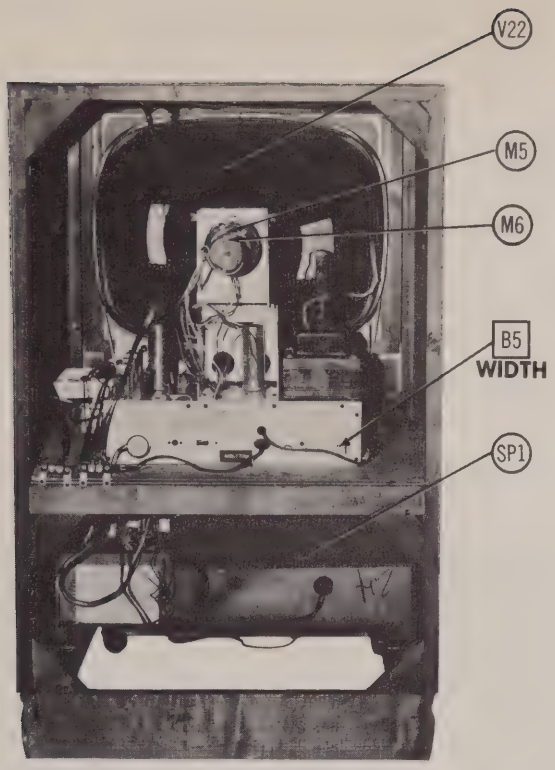


VHF TUNER-RIGHT SIDE



VHF TUNER-LEFT SIDE

PROPERTY OF
DENVER, COLORADO



CABINET—REAR VIEW
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the noise balance control to maximum clockwise.

Connect the vertical input of an oscilloscope through a 10 to 50MMF capacitor to terminal "C" on L38

Connect the DC probe to pin 1 (grid) of 6AU5, V18.

Connect common lead to chassis.

Set the horizontal locking range trimmer (B1) 1/4 turn from tight.

Set the horizontal drive trimmer (B2) for -9volts on VTVM.

With horizontal lock control at center of its range, adjust the horizontal frequency slug (B3) to sync the picture horizontally.

Adjust the horizontal waveform slug B4 for a waveform on the oscilloscope as in Fig. 6. The broad peak of the waveform should be slightly lower in amplitude than the sharp peak for long term stability. If necessary while adjusting B4, keep the picture in sync by turning B3.

Set the horizontal lock control at maximum clockwise position and switch off channel and back.

There should be 3 diagonal bars present in the picture.

Retouch B3 for that number, if necessary.

When switching channels, picture should pull in sync over half the rotation of the horizontal lock control.

If sync range is less, adjust B1 counter clockwise for desired result.

If picture jitters at any position of the horizontal lock control, turn control clockwise to position that produces the greatest amount of jitter and adjust B3 clockwise until jitter is eliminated. If adjustment of B3 does not eliminate jitter, adjust B1 in clockwise direction.

If jitter still persists , shunt horizontal locking range capacitor with 100MMF. Re-check break-out on clockwise end of B1 when switching channels.

Turn B1 counter clockwise if sync does not pull in at least half of rotation range of horizontal lock control.

Adjust the width control slug (B5) for a picture slightly wider than necessary to fill the picture mask horizontally.

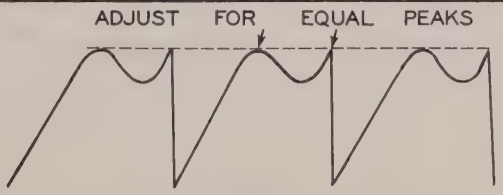


FIG. 6

SET 225 FOLDER 16

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V17, V18, V19 and V21. Check waveform W15.

If Satisfactory	If Unsatisfactory
Check C110, C112, C114, T3 T5A and other associated components.	Check C104, C105, C106, C107, L38 and other associated components.

DRIVE LINES

Check by substitution V18 and V19. Check adjustment of horizontal drive trimmer (B2). Check C106 , C107, C111, C110, C112, C114, T3, T5A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V17, V18 and V19. Check adjustment B2 and B5. Check T3, T5A, C110 and other associated components.

FOLDS

Check by substitution V18 and V19. Check C110, C112, C114, T3, T5A and other associated components.

XMAS TREE EFFECT

Substitute V17. Check L38, C104, C105, C106, C107 and other components associated with the horizontal oscillator stage.

VERTICAL

LOSS OF SWEEP

Check by substitution V15 and V16. Check waveform W9.

If Satisfactory	If Unsatisfactory
Check T4, T5B and other associated components.	Check C95, C97, C98, T2 and other components associated with V15.

INSUFFICIENT SWEEP

Check by substitution V15 and V16. Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check by substitution V15 and V16. Check C5, C4, T4, T5B and other associated components.

COMPRESSED AT TOP

Check by substitution V15 and V16. Check adjustment of height and vertical linearity controls. Check components associated with V15 and V16.

FOLDS

Check by substitution V15 and V16. Check components associated with these stages especially C92, C93, C97 and C98.

SYNC

LOSS OF HORIZONTAL AND VERTICAL SYNC

Substitute V14. Check components associated with V14 for change of value or failure.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Substitute V17. Check C99, C100, C104 and other components associated with V17.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Substitute V15 and V14. Check waveform W7.

If Satisfactory	If Unsatisfactory
Check components associated with V15.	Check vertical integrator and other components associated with V14.

HORIZONTAL BENDING OR S-ING

Substitute V17 and V18. Check C102, C103 and other components of the AFC filter network.

VIDEO

LOSS OF VIDEO

Check C71, R41, R4, picture tube and other associated components.

SOUND BARS

Check adjustment of local oscillator. Check 4.5MC trap adjustment A12. Check video IF alignment.

POOR RESOLUTION

Check by substitution V2, V4, V5, V6, and V7. Check video IF alignment. Check components associated with the video IF stages especially all bypass capacitors. Check bypass and coupling capacitors associated with V8.

POOR CONTRAST

Check by substitution V7 and V8. Check components associated with these stages.

SMEAR

Check by substitution V7 and V8. Check L34, C66, C67, C68, C71, R40, R46, R41 and other components for change of value or failure. Check picture tube.

WIDE BLACK BAR ACROSS PIX

Check V2, V3, V4, V5, V6, V7 and V8 for heater to cathode leakage. In case of UHF check V1.

AUDIO

WEAK OR NO SOUND

Check by substitution V10, V11, V12 and V13. Check stages of V12 and V13 using an audio signal generator. Connect audio signal across R56.

If Satisfactory	If Unsatisfactory
Check audio IF and Ratio detector alignment and components.	Check components associated with V12 and V13 especially coupling and bypass capacitors.

BUZZ

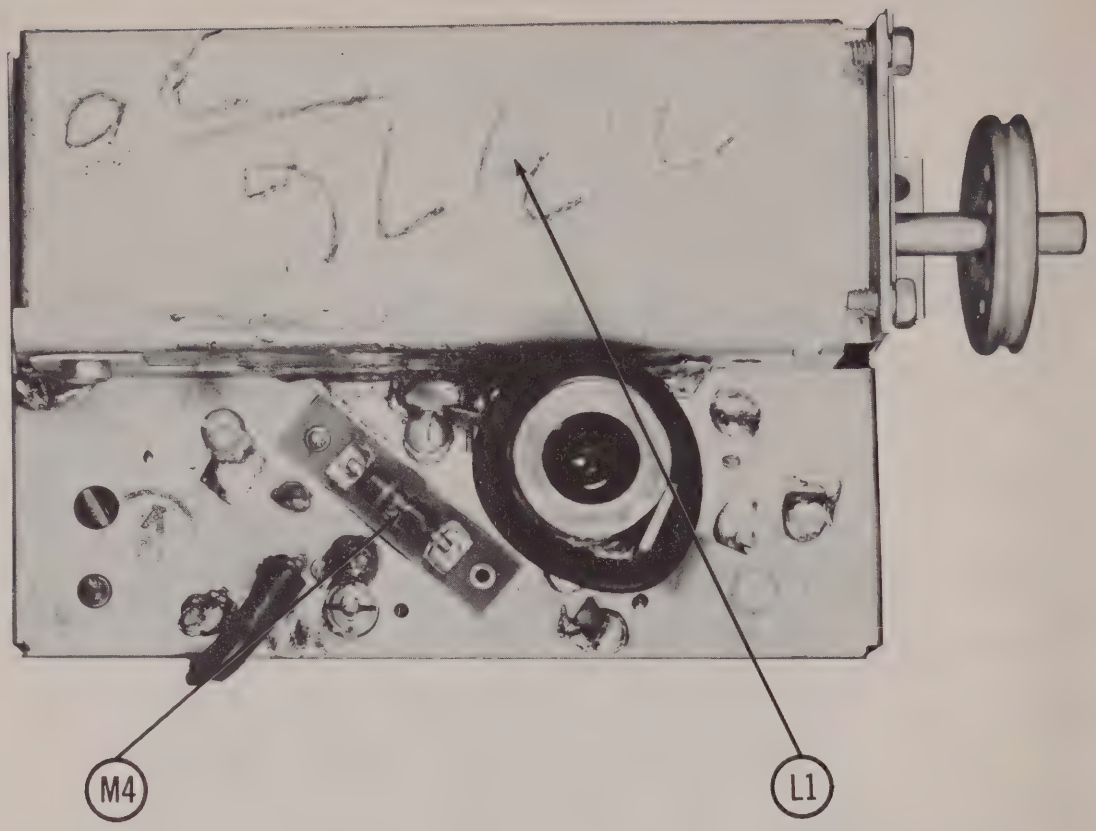
Readjust A10 and A11. If buzz is still objectionable substitute V11 and readjust A11. Check C6 and C80.

DISTORTED

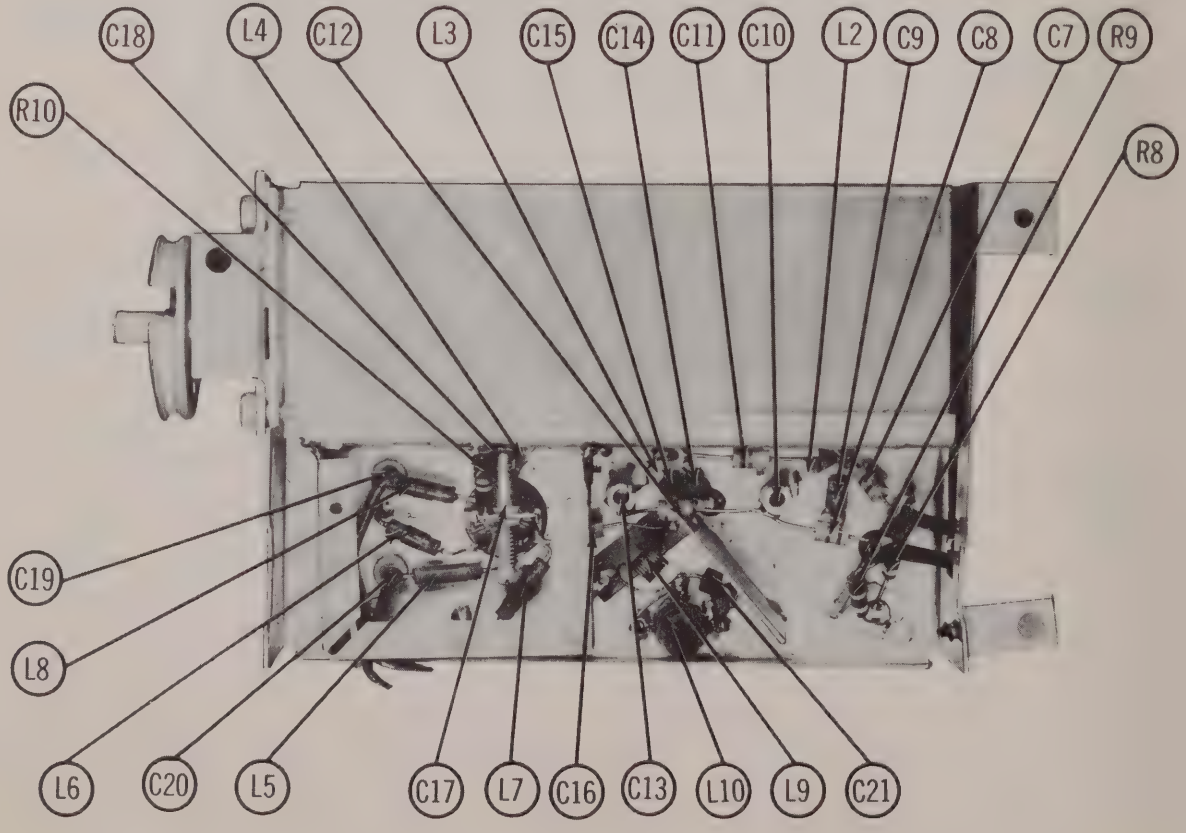
Check by substitution V10, V11, V12 and V13. Follow procedure outlined under " Weak or No Sound".

PROPERTY OF
L. F. MANSHIP
DENVER, COLORADO

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



UHF TUNER TOP VIEW



UHF TUNER-BOTTOM VIEW

TV PARTS LIST & DESCRIPTION

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ITEM No.	USE	REPLACEMENT DATA: Silvertone PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	UHF Oscillator	6AF4	6AF4	7DK	
V2	RF Amplifier	6BZ7	6BZ7	9AJ	
V3	Converter	6X8	6X8	9AK	
V4	1st Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Detector Noise Balance	12AX7	12AX7	9A	
V8	Video Output	6CB6	6CB6	7CM	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector	6AL5	6AL5	6BT	
V12	AF Amplifier	6AV6	6AV6	7BT	
V13	Audio Output	6AQ5	6AQ5	7BZ	
V14	Sync Separator Sync Amplifier	12AU7	12AU7	9A	
V15	Vert. Oscillator	6AV6	6AV6	7BT	
V16	Vert. Output	12BH7	12BH7	9A	
V17	Horiz. AFC- Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6AU5GT	6AU5GT	6CK	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rectifier	1B3GT	1B3GT	3C	
V21	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Silvertone PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: GENERAL ELECTRIC PART No.	RTMA BASE TYPE	NOTES
V22A	21MP4	21MP4	21MP4	12C	
B	21YP4	21YP4		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲80	450	PMA-42000	AFH2-62		BO47		FP245	TVL-2776	
B	▲10	400								
C2A	▲40	450	PMA-42001	AFH4-93		CO35		FP240	TVL-2668	
B	■50	350						TC78	TVA-1712	
C	▲50	300								
C3	20	300	PMA-42006	PRS450/20		BR2035		TC65	TVA-1608	
C4	100	50	PMA-42005	PRS50/100		BRH501		TC3501	TVA-1310	
C5	20	300	PMA-42006	PRS450/20		BR2035A		TC65	TVA-1608	
C6	1	50	PMA-42002	PRS150/4		BBR-1-50T		TC31	TVA-1300	
C7	1			SIINP0	TCZ-1		NP0K-010		5TCCB-V1	
C8	1			SIINP0	TCZ-1		NP0K-010		5TCCB-V1	
C9	2.7									
C10	.8-6.5									
C11	.25									
C12	.25									
C13	.8-6.5									
C14	2.5									
C15	2.2			SI2.2NP0	TCZ-2.2		NP0K-2R2		5TCCB-V22	
C16	.7									
C17	3-10									
C18	6									
C19	68			SI68	D6-680		GP1K-680	UC-5468	5GA-Q68	
C20	68			SI68	D6-680		GP1K-680	UC-5468	5GA-Q68	
C21	15			SII5	D6-150		GP1K-150	UC-5415	5GA-Q15	
C22	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C23	110			SII10						
C24	12			SII2NP0	TCZ-12		NP0K-120		5TCC-Q12	
C25	15			SII5	D6-150		GP1K-150	UC-5415	5GA-Q15	
C26	800			BPD-0008	DD-102	TM5T8	801-001	DC-521	5HK-D1	
C27	3									
C28	470									
C29	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C30	800			BPD-0008	DD-102	TM5T8	801-001	DC-521	5HK-D1	
C31	.36									
C32	1.6									
C33	1.5			SII.5NP0	TCZ-1.5		NP0K-1R5		5TCCB-V15	
C34	.75									
C35	.3									
C36	1.5						N330K-1R5			
C37	10									
C38	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C39	800			BPD-0008	DD-102	TM5T8	801-001	DC-521	5HK-D1	
C40	1.5			SII.5NP0	TCZ-1.5		NP0K-1R5		5TCCB-V15	
C41	1.6									
C42	10			SII0NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C43	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C44	800			BPD-0008	DD-102	TM5T8	801-001	DC-521	5HK-D1	
C45	110			SII00						
C46	.75									
C47	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C48	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C49	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C50	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C51	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C52	620		PMA-40521-42							
C53	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C54	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C55	620		PMA-40521-42							
C56	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C57	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C58	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C59	620		PMA-40521-42							
C60	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	

PROPERTY OF
L. F. BLANKENSHIP
DENVER, COLORADO

PARTS LIST & DESCRIPTION (continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C61	150Ω		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C62	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C63	220			SI220	D6-221		GP2K-221	UC-5221	5GA-T22	
C64	1500		PMA-40517-3	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C65	1500		PMA-40517-3	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C66	5		PMB-40518-1	BSNP0	TCZ-4.7		NP0K-050	UZ-555	5TCCB-V47	
C67	5000		PMA-40517-3	BPD-005	MB-502	TM5D5	811-005	DC-525	5HK-D5	
C68	220		PMB-40518-19	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C69	1500		PMA-40517-3	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	Note 1
C70	47			SI47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C71	.1	600	PMB-41007-51	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C72	.02	400	PMB-41007-74	P488-02	DF-203	PTE482		PT412	4TM-S2	
C73	2000	1500	PMA-41005-1	HVD15-00022				MCB222	20GA-T22	
C74	47	500	PM3-40003-15	1469-00005		5R5Q5		MCB225	MS-45	
C75	.47	200	PMB-41007-17	P288-47		PJ2P5		PT405	2TM-P47	
C76	2		PMB-40518-3	SI2.2M50	TCZ-3.2		NP0K-2R2		5TCCB-V22	
C77	47			SI47N080			N080-331-470			
C78	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C79	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C80A	1500		PMA-40517-4	BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C81	1500		PMB-40517-2	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C82	5000		PMB-40518-32	BPD-005	DD-152	TM5D5	801-0005	DC-5205	5HK-D5	
C83	.01	200	PMB-41006-7	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C84	5000		PMA-40517-3	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C85A	.005									
B	250		†PMA-95001	†PA112-1	†PC-70		†1406-01		†104C4	
C										
C86	1000		PMB-40518-24	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C87	.01	600	PMB-41006-45	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C88	.05	600	PMB-41006-49	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C89	.02	600	PMB-41007-85	P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C90	150		PMB-40518-17	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
C91A	.002					PTE6D2		PT6D2		
B	.005		♦PMA-95000	♦PA-110	♦PC-100	PTE6D5	♦1405-01	PT625	♦101C1	
C	.005					PTE6D5		PT625		
C92	4700	500	PMB-40003-63	1464-005		5R5D5		MCB5465	MS-25	
C93	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C94	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C95	1500		PMB-40518-24	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C96	470	1000	PMA-40520-23							
C97	.05	600	PMB-41006-49	P688-05		PTE6S5		PT615	6TM-S5	
C98	.1	600	PMB-41006-51	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C99	180	500	PMB-41003-29							
C100	2200	500	PMB-41003-55							
C101	.05	400	PMB-41008-30	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C102	.02	400	PMB-41008-28	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C103	.25	200	PMB-41006-15	P288-25		PJ2P25		PT4025	2TM-P25	
C104	390	500	PMB-41003-37	1469-0004		5R5T4		MCB543	MS-24	
C105	.01	400	P488-01	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C106	1000	500	PMB-41003-47	1479-001		2R5D1		MCB255	MS-21	
C107	.001	600	PMB-41006-39	P688-001	D6-102	PTE6D1	GP2L-102	PT601	6TM-D1	
C108	100		PMB-40518-14	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C109	47	500	PMB-41003-15	1469-00005		5R5Q5		MCB225	MS-45	
C110	.025	600	PMB-41006-47	P688-025		PJ6S25		TP451		
C111	.25	200	PMB-41006-15	P288-25		PJ2P25		PT4025	2TM-P25	
C112	.03	600	PMB-41007-76	P688-03		PTE6S3		PT613	6TM-S3	
C113	100	3000	PMA-40523-23	HVD30-0001					30GA-T1	
C114	.25	600	PMB-41007-53	P688-25		PTE6P25		PT6025	6TM-P25	
C115	500	30000	PMA-40004	HV20C	TV3-502	MM-C20T5	413-501	RV30035A	20DK-T5	
C116	.047	400	PMB-41007-30	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C117	.01	400	PMA-41002-45	4892X-01		PJ4S1		PT411	4TM-S1	Note 1
C118	K7	1500	PMB-40002-15	HVD15-000047					20GA-Q47	

Note 1. Not used in all Models.
† Items C85A, C85B, C85C, R57A, R57B are combined in one unit.
When replacing items separately C85B and C85C should total 350MMF.
♦ Items C91A, C91B, C91C, R66A, R66B, R66C are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750Ω	2	PMB-48015	QJ-415 *	RTV-382		WF751	Contrast - Panel
B	500KΩ	½	Not Reg.				UR55A †	Volume-Rear
C	Switch		Not Reg.				US-26	Attach to R1B
R2A	50KΩ	½	PMB-48014-1	QU-123	AG-44-8	AB-31	U-35	Horiz. Hold
B	Shaft		Not Reg.	Not Reg.	KS8-3	AK-1	Not Reg.	Attach to R2A
R3A	250KΩ	½	PMB-48014-2	QU-130	AG-55-8	AB-50	SU-46	Noise Balance
B	Shaft		Not Reg.	BQ	FKS-1/4	AK-1	Not Reg.	Attach to R3A
R4A	100KΩ	½	PMB-48014-2	Q-128	AG-49-8	AB-40	U-41	Brightness
B	Shaft		Not Reg.	Not Reg.	KS8-3	AK-1	Not Reg.	Attach to R4A
R5A	2.5Meg	½	PMB-48014-5	QU-139	AG-84-8	AB-83	SU-565	Height
B	Shaft		Not Reg.	BQ	FKS-1/4	AK-1	Not Reg.	Attach to R5A
R6A	1.5Meg	½	PMB-48014-7	QU-138	AG-83-8	AB-75	U-155	Vert. Hold
B	Shaft		Not Reg.	Not Reg.	KS8-3	AK-1	Not Reg.	Attach to R6A
R7A	5000Ω	½	PMA-48016	QU-114	AG-19-8	AB-10	SU-14	Vert. Linearity
B	Shaft		Not Reg.	BQ	FKS-1/4	AK-1	Not Reg.	Attach to R7A

* CONCENTRIKIT EQUIVALENT KIT-K-3, BASE ELEMENTS & SHAFTS W11 -105 & P3-114 (Panel)
B13-133 & R1-205 (Rear) & SWITCH 76-1
† Universal replacement (Mallory exact duplicate Part No. UZ2IWS)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Silvertone PART No.	IRC PART No.	NOTES
R8	470KΩ	½		BTS-470K	
R9	470KΩ	½		BTS-470K	
R10	12KΩ	½		BTS-12K	
R11	4700Ω	½		BTS-4700	
R12	1Meg 5%	½		BTS-1Meg 5%	
R13	1000Ω	½		BTS-1000	
R14	150KΩ	½		BTS-150K	
R15	220KΩ	½		BTS-220K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Silvertone PART No.	IRC PART No.	NOTES
R16	2200Ω	½		BTS-2200	
R17	1000Ω	½		BTS-1000	
R18	15KΩ	½		BTS-15K	
R19	2200Ω	½		BTS-2200	
R20	220Ω	½		BTS-220	
R21	3900Ω	½		BTS-3900	
R22	470Ω	½		BTS-470	
R23	4700Ω	½	PMA-45015-33	BTS-4700	

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Silvertone PART No.	IRC PART No.	NOTES
R24	330Ω	½	PMA-45015-19	BTS-330	
R25	47Ω	½	PMA-45015-9	BTS-47	
R26	330Ω	½	PMA-45015-19	BTS-330	
R27	1000Ω	½	PMA-45015-25	BTS-1000	
R28	150Ω	½	PMA-45015-15	BTS-150	
R29	47Ω	½	PMA-45015-9	BTS-47	
R30	1000Ω	½	PMA-45015-25	BTS-1000	
R31	150Ω	½	PMA-45015-15	BTS-150	
R32	4700Ω	2	PMA-45019-33	BTB-4700	
R33	4700Ω	2	PMA-45019-33	BTB-4700	
R34	27KΩ	½	PMA-45015-42	BTS-27K	
R35	220KΩ	½	PMA-45015-53	BTS-220K	
R36	100KΩ	½	PMA-45015-49	BTS-100K	
R37	100KΩ	½	PMA-45015-49	BTS-100K	
R38	4700Ω	½	PMA-45015-33	BTS-4700	
R39	6.5Ω 24.5Ω	½	PMA-45015-61	BTS-1Meg	
R40	2200Ω	½	PMA-45015-29	BTS-2200	
R41	100KΩ	½	PMA-45015-49	BTS-100K	
R42	270KΩ	½	PMA-45015-54	BTS-270K	
R43	47KΩ	½	PMA-45015-45	BTS-47K	
R44	33KΩ	½	PMA-45015-44	BTS-33K	
R45	33KΩ	½	PMA-45015-44	BTS-33K	
R46	6800Ω	2		BTB-6800	
R47	390KΩ	½	PMA-45015-58	BTS-390K	
R48	100KΩ	½	PMA-45015-49	BTS-100K	
R49	100KΩ	½	PMA-45015-49	BTS-100K	
R50	82Ω	½	PMA-45015-12	BTS-82	
R51	1000Ω	½	PMA-45015-25	BTS-1000	
R52	270Ω	½	PMA-45015-18	BTS-270	
R53	47KΩ	½	PMA-45015-45	BTS-47K	
R54	10KΩ	½	PMA-45015-37	BTS-10K	
R55	10KΩ	½	PMA-45015-37	BTS-10K	
R56	10Meg	½	PMA-45015-73	BTS-10Meg	
R57A	500KΩ	½	† PMA-95001		
B	500KΩ	½			
R58	330Ω	1	PMA-45017-19	BTA-330	
R59	820Ω	2	PMA-45019-24	BTB-820	
R60	470KΩ	½	PMA-45015-57	BTS-470	
R61	4.7Meg	½	PMA-45015-69	BTS-4.7Meg	
R62	470KΩ	½	PMA-45015-57	BTS-470K	
R63	2700Ω	½	PMA-45015-30	BTS-2700	
R64	1800Ω	½	PMA-45015-28	BTS-1800	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Silvertone PART No.	IRC PART No.	NOTES
R65	2200Ω	½	PMA-45015-29	BTS-2200	
R66A	22KΩ	½	♦ PMA-95000	BTS-22K	
B	8200Ω	½		BTS-8200	
C	8200	½		BTS-8200	
R67	820KΩ	½	PMA-45015-60	BTS-820K	
R68	150KΩ	½	PMA-45015-51	BTS-150K	
R69	270KΩ	½	PMA-45015-54	BTS-270K	
R70	1MegΩ	½	PMA-45015-81	BTS-1Meg	
R71	8200Ω	½	PMA-45015-36	BTS-8200	
R72	2200Ω	½	PMA-45015-29	BTS-2200	
R73	10KΩ	½	PMA-45015-37	BTS-10K	
R74	470Ω	½	PMA-45015-31	BTS-470	
R75	47Ω	½	PMA-45015-9	BTS-47	
R76	560Ω	½	PMA-45015-22	BTS-560	
R77	560Ω	½	PMA-45015-22	BTS-560	
R78	1000Ω	½	PMA-45015-25	BTS-1000	
R79	120KΩ	1	PMA-45017-50	BTA-120K	
R80	68K	1	PMA-45017-47	BTA-68K	
R81	820K	½	PMA-45015-60	BTS-820K	
R82	8200Ω	½	PMA-45015-36	BTS-8200	
R83	150KΩ	1	PMA-45017-51	BTA-150K	
R84	150KΩ	1	PMA-45017-51	BTA-150K	
R85	100KΩ	1	PMA-45017-49	BTA-100K	
R86	2.7Meg	1	PMA-45017-66	BTA-2.7Meg	
R87	8200Ω	½	PMA-45015-36	BTS-8200	
R88	68KΩ	1	PMA-45017-47	BTA-68K	
R89	10KΩ	1	PMA-45015-37	BTS-10K	
R90	100KΩ	½	PMA-45015-49	BTS-100K	
R91	150KΩ	½	PMA-45015-51	BTS-150K	
R92	150Ω	½	PMA-45015-15	BTS-150	
R93	470KΩ	½	PMA-45015-57	BTS-470K	
R94	220Ω	4	PMB-47007-3		
R95	6800Ω	2	PMA-45019-35	BTB-6800	
R96	47KΩ	½	PMA-45015-45	BTS-47K	
R97	1000Ω	1	PMA-45017-25	BTA-1000	
R98	3.3Ω	1	PMA-45013-1		
R99	220KΩ	½	PMA-45015-53	BTS-230K	
R100	60Ω	6	PMB-47007-4		
R101	250Ω	15	PMB-47007-5	2D-250	
R102	1000Ω	7.5	PMB-47007-1	1 3/4A-1000	
R103	1000Ω	7.5	PMB-47007-1	1 3/4A-1000	
R104	27KΩ	1	PMA-45017-42	BTA-27K	
R105	470KΩ	1	PMA-45017-57	BTA-470K	

† Items R57A, R57B, C85A, C85B, C85C are combined in one unit.
♦ Items R66A, R66B, R66C, C91A, C92B, C93C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA-TYPE No.
T1	117VAC	690VCT	5VAC	6.3VAC	PMB-50003				R-49B8	
	① 1.92A	230ADC	② 3A	③ 3A						
			SEC 4	SEC 5						
			6.3VAC	6.3VAC						
			④ 1.2A	⑤ 7.8A						

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING SEC.	REPLACEMENT DATA Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	300Ω	1160Ω	PMA-56005-2	A-8111	A-3000	TEO-5⑦	A-97K⑦	209T1	Vert. Osc. Trans.
			PMA-56005①						
T3	596-tap ② 26Ω	290 tap ② 2.5Ω 8.5Ω 25.5Ω SEC2 0Ω	PMC-56002		HVO-9③	TFB-18	D-23④	225T1	Horiz. output Trans.
T4	150Ω tap⑤ 5Ω		PMA-56004	A-8141	A-3039	TSO-12	A-104X	226T1	Vert. output Trans.
T5A	20Ω		PMB-97213	DY-9A⑥	MDF-72	TY-3⑦	Y-17⑥	21ID2	Horiz. deflection coils
B	46Ω		PMA-56000⑧						Vert. deflection coils
T6	8Ω		PMA-56003	WC-5③	MWC-6	TW-7	WC-12②	21IR1	Width coil

① Alternate Vert. Osc. Trans.
② Drill one new mounting hole.
③ Connect as in original circuit, exc ept do not connect terminal No. 8 to terminal No. 7.
④ Connect as in original circuit.
⑤ Alternate yoke.
⑥ Use original horiz. deflection network, if necessary.
⑦ Use original deflection coil network.
⑧ Connect to coded black and orange terminals.
⑨ Connect to coded blue and red terminals.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T7	75KΩ	3Ω	425Ω	.6Ω	PMB-51005	A-3878	A-3020①	RO-13	S-9X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA Silvertone PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	5"x7"	PM	3Ω	B90020	5739	57A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Silvertone PART No.	MEISSNER PART No.	MERIT PART No.	MILLEN PART No.	NOTES
L1A	UHF Ant. Coil	0Ω						
B	UHF Mixer Grid Coil	0Ω						
C	UHF Osc. Coil	0Ω						
L2	UHF Ant. Coil End Inductor	0Ω						
L3	UHF Mixer Coil End Inductor	0Ω						
L4	UHF Osc. Coil End Inductor	0Ω						
L5	Fil. Choke	.3Ω						
L6	Fil. Choke	.3Ω						.38 Microhenry
L7	Cathode choke	0Ω						.38 Microhenry
L8	RF Choke	0Ω						
L9	UHF IF Coupling	0Ω						
L10	UHF IF Output Coil	0Ω	0Ω					
L11	UHF IF Coil	0Ω						
L12	UHF IF Coil	0Ω						Low channel secondary=0Ω
L13	Ant. Trans.	0DCT	0Ω					
L14	Ant. Coils	0Ω						Channel 13
L15	Ant. Coil	0Ω						
L16	Fil. Choke	0Ω						
L17	Neutr. Coil	0Ω						Channel 13
L18	RF Coil	0Ω						
L19	RF Coils	0Ω						Channel 13
L20	Mixer Grid Coil	0Ω						
L21	Mixer Grid Coils	0Ω						Channel 13
L22	Osc. Plate Coil	0DCT						Channel 6
L23	Osc. Coils	0Ω						
L24	Osc. Coil	0Ω						
L25	Conv. Plate	.1Ω						Includes trap, 1500 MMF capacitor & 3.3KΩ Resistor
L26	1st Video IF	0Ω		PMB-52051				
L27	2nd Video IF	0Ω	0Ω	PMB-52050			6232*	Includes trap & 15KΩ Resistor
L28	Fil. Choke	0Ω		PMB-52053			4606	2.5 Microhenries
L29	3rd Video IF	0Ω	0Ω	PMB-52049			6233*	Includes trap & 15KΩ Resistor
L30	4th Video IF	0Ω	0Ω	PMB-52052			6234	
L31	Series Peak. Coil	4.4Ω		PMA-52033	19-3093	TV-181	4642	100 Microhenries
L32	Shunt. Peak. Coil	1Ω		PMA-52034	19-3500	TV-188	4586	450 Microhenries
L33	4.5MC Trap	2Ω		PMA-52038-2	20-1004	TV-151	1470	Silvertone Part # includes C79
L34	Series Peak. Coil	7Ω		PMA-52025	19-3180 †	TV-184 †	6154 †	200 Microhenries Wound on 22KΩ resistor.
L35	Shunt. Peak. Coil	1Ω		PMA-52034	19-3500	TV-188	4586	450 Microhenries
L36	1st Sound IF	2.2Ω		PMA-52038-2	17-3400	TV-151	1469	Silvertone Part # includes C77
L37	Ratio Det.	2.5Ω	1.3ΩCT	PMA-52037	17-3497	TV-115	6205	Tertiary winding=.35Ω
L38	Horiz. Osc.	75Ω		PMB-52019	20-1402	TV-162	6183	Pri. Tapped ⑤ 52Ω Horiz. Waveform winding= 44Ω

* Add 15KΩ resistor externally.
† Parallel with 22KΩ resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Silvertone PART No. FUSE	Silvertone PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AS 8/TD	1/4A			312.250 (3AG-1/4A)	357001	AGC 1/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	REPLACEMENT DATA Silvertone PART No.	NOTES
M2	RF Tuner	PMC-57006	VHF
M3	RF Tuner	PMC-57009	UHF
M4	Crystal		IN73 UHF mixer
M5	Centering magnet	PMB-58013	
M6	Ion Trap	PMB-58012	
B1, B2	Trimmer cap	PMA-43001	Horiz. lock and horiz. drive (25-280UUF)(80-480UUF)

RADIO PARTS LIST & DESCRIPTION

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		Silvertone PART No.	STANDARD REPLACEMENT		
V23	AM Converter	6BE6	6BE6	7CH	
V24	IF Amplifier	6BA6	6BA6	7BK	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C119	05	400	PMB-41006-30	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C120	82	500	PMB-40003-21							
C121	05	600	PMB-41006-49	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C122	10000		PMA-40517-5	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C123	100		PMB-40518-14	S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R106A	50KΩ	½	B-48018-1	Q13-123	AG-46-Z	B-32	U-33	Tone- NOTE
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R105A

Note: Some models may use alternate control part No. PMB-48018-2

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Silvertone PART No.	IRC PART No.	
R107	22KΩ	½	PMB-45015-41	BTS-22K	
R108	2.2Meg	½	PMB-45015-65	BTS-2.2Meg	
R109	330Ω	½	PMB-45015-19	BTS-330	
R110	10KΩ	½	PMB-45019-37	BTB-10K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Silvertone PART No.	IRC PART No.	
R111	8200Ω	2	PMB-45019-36	BTB-8200	
R112	47KΩ	½	PMB-45015-45	BTS-47K	
R113	470KΩ	½	PMB-45015-57	BTS-470K	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Silvertone PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L39	Ant. Coil	.6Ω		PMB-52034				
L40	Osc. Coil	4.4Ω		PMA-52032	14-1060 ▲		71-Osc. ▲	Tapped ⓐ .4Ω
L41	Input IF	15Ω	15Ω	PMD-52033-1	16-6758	BC-352	12-C1	
L42	Output IF	15Ω	15Ω	PMD-52033-2	16-6758	BC-353	12-C2	

▲ Use primary winding only.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	Silvertone PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M7		GC-AG-J	G-AG	WC36B	A56U	43	0-2 or S-2	

ASTATIC SHURE AND ELECTRO VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTHRIDGE NEEDLE REPLACEMENT SEE BELOW.

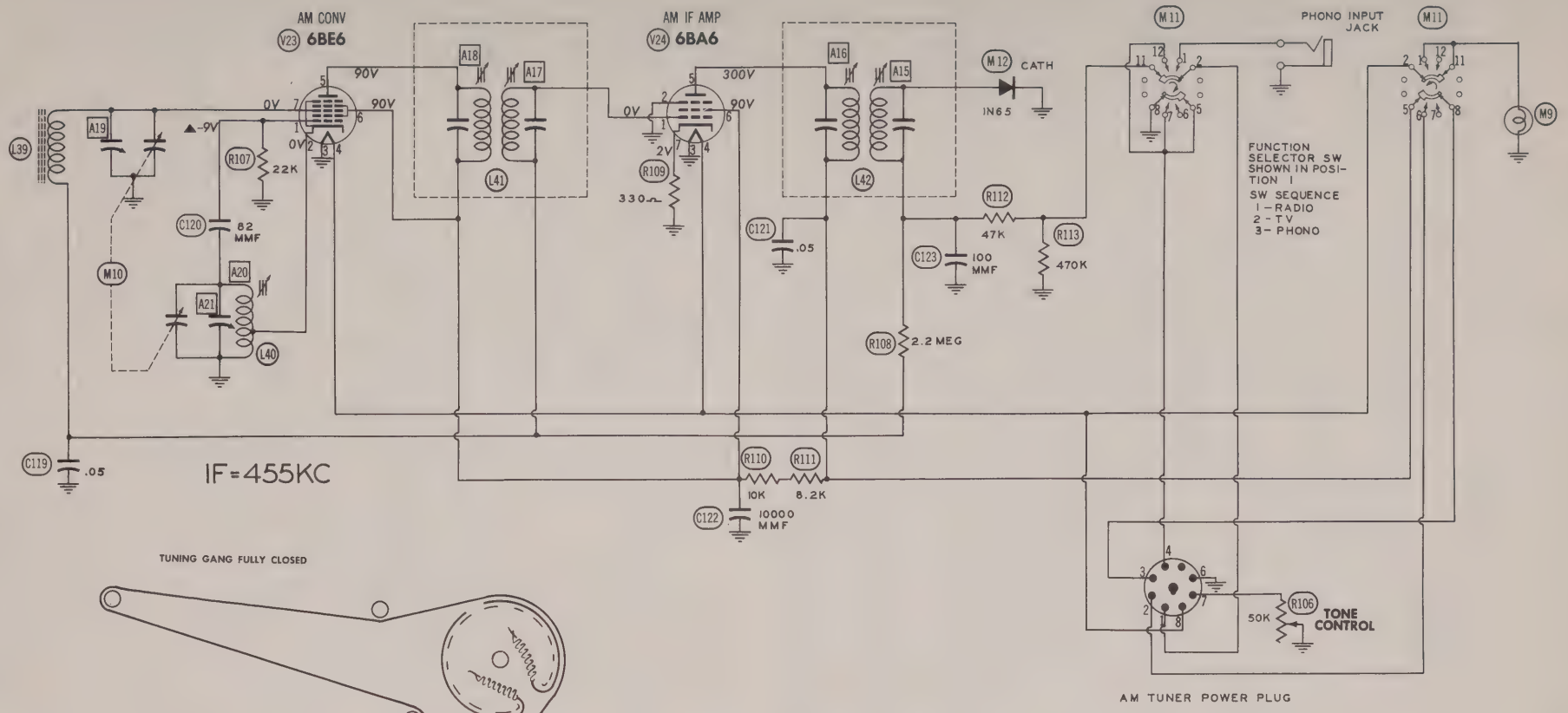
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Silvertone PART No.	WALCO PART No.	JENSEN PART No.	
M8		W-3AGA or W-3AGS	S-642 or S-652	

MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M9	Dial light		#47 bayonet
M10	Tuning cap	PMB-44001	2 gang (45-482MMF)(14-190MMF)
M11	Switch	PMB-60006-1	Function selector-rotary
M12	Crystal		AM Detector (1N-65)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 23	6BE6	22KΩ	.4Ω	0Ω	.1Ω	† 18KΩ	† 18KΩ	2.7Meg
V 24	6BA6	2.7Meg	0Ω	0Ω	.1Ω	† 250Ω	† 18KΩ	330Ω

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V21.
ALL MEASUREMENTS TAKEN WITH M11 IN RADIO POSITION.

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3824 FEDERAL BLVD.
DENVER, COLORADO

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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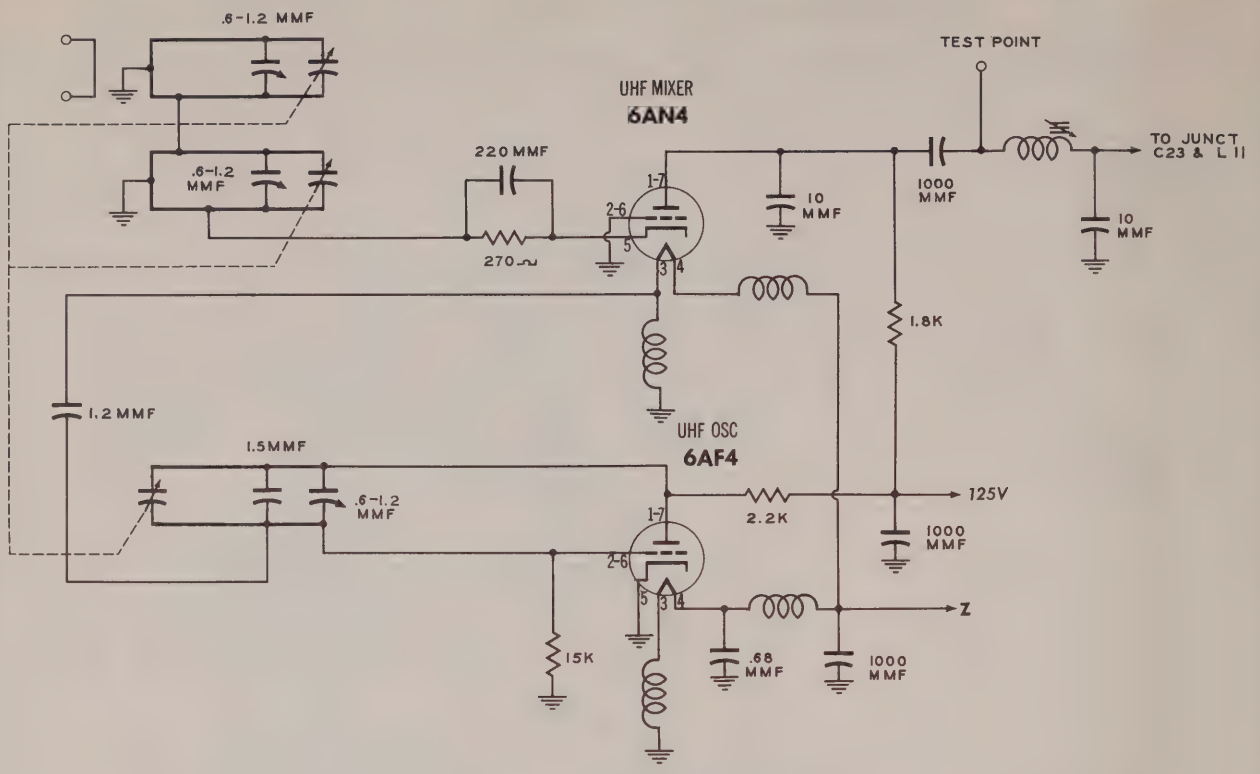
SILVERTONE MODELS 3376, 3377
(Ch. 456.200-111, -112, -113, -114, -115, -121, -122, -123, -124, -125)

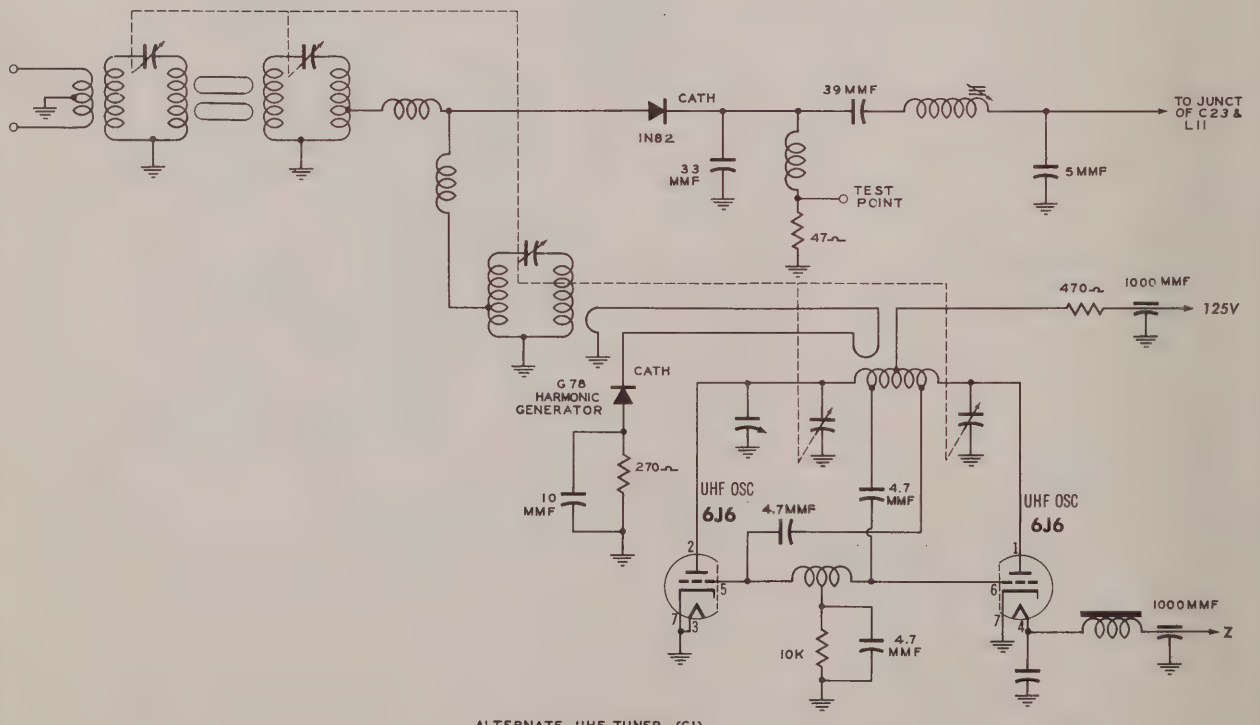
RADIO SCHEMATIC

SILVERTONE MODELS 3376, 3377
(Ch. 456.200-111, -112, -113, -114, -115, -121, -122, -123, -124, -125)



ALTERNATE UHF TUNER (SARKES PART NO 57008)

ALTERNATE UHF TUNER SCHEMATIC



ALTERNATE UHF TUNER (G1)

ALTERNATE UHF TUNER SCHEMATIC

TROUBLE SHOOTING AIDS (cont)

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly, switch on volume control and T1. If filaments light, check V21 and B+ filter and decoupling components.

SMALL AND/OR DIM PICTURE

Substitute V21. Check B+ filter and decoupling components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse M1. Check by substitution V17, V18, V19 and V20. Check waveform W15.

If Satisfactory	If Unsatisfactory
Check C110, C112, C113, C114, T3, T5A, R95, R98 and R105.	Check C105, C106, C107, C111 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V17, V18, V19, V20 and V21. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V20, V19, V18, V17 and V21. Check T3, T5A, R98, R105, C115, R95, picture tube and other associated components.

GENERAL

RASTER SOUND NO PIX

See "Loss of Video".

RASTER NO SOUND NO PIX

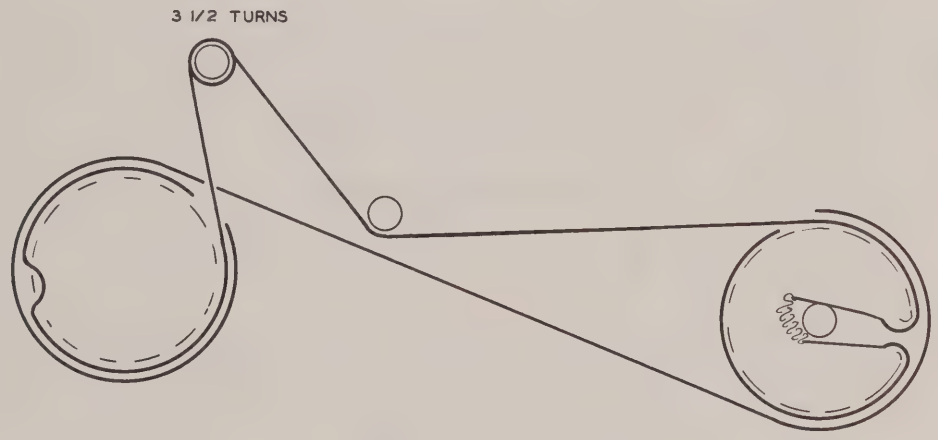
Check by substitution V2, V3, V4, V5, V6, V7 and V8. Check associated components.

NO RASTER NO SOUND

See "Dead Set".

INTERMITTENT STREAKS

Check signal at W1 for interference pulses. Check high voltage network for corona discharge or arcing.



UHF DIAL CORD STRINGING

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 3 wood screws.holding wood strip at top of safety glass. Remove wood strip and safety glass (Use extreme caution when removing safety glass).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SPECIAL ADJUSTMENTS - NOISE BALANCE CONTROL

Tune to strongest TV signal available. Turn control fully clockwise, then counter clockwise until picture starts to distort.

Back off the adjustment enough to eliminate the distortion.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the front panel service controls. Set the horizontal lock control to the mid-position of its range and adjust the horizontal frequency slug, L38, until the picture synchronizes horizontally. If synchronization cannot be obtained by the above adjustment see horizontal sweep circuit adjustments on page 11.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L37) located on top of chassis. (See tube placement chart).

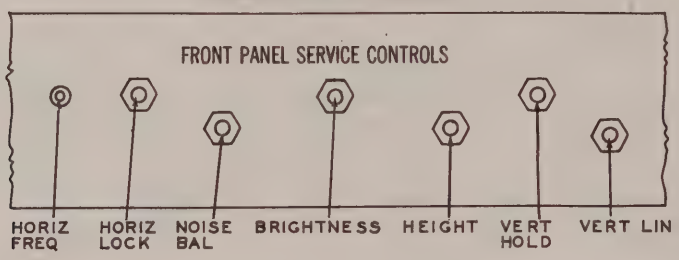
FUSES

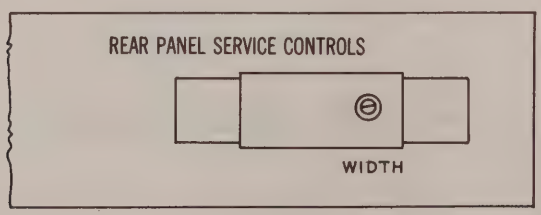
One fuse is used for horizontal and vertical sweep circuit protection. (See tube placement chart for location).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

SERVICE ADJUSTMENT LOCATION





DISASSEMBLY INSTRUCTIONS

TV

Remove 5 push on type control knobs from front panel.

Remove 9 wood screws. Remove rear cover.

Disconnect VHF built-in antenna. Remove 4 wood screws.

Remove VHF and UHF antenna bracket.

Disconnect AC phono motor plug, speaker plug, and radio plug from rear of TV chassis.

Remove 4 chassis bolts. Remove chassis.

RADIO

Remove 2 spring clips and pins from phono drawer slides and remove phono drawer from cabinet.

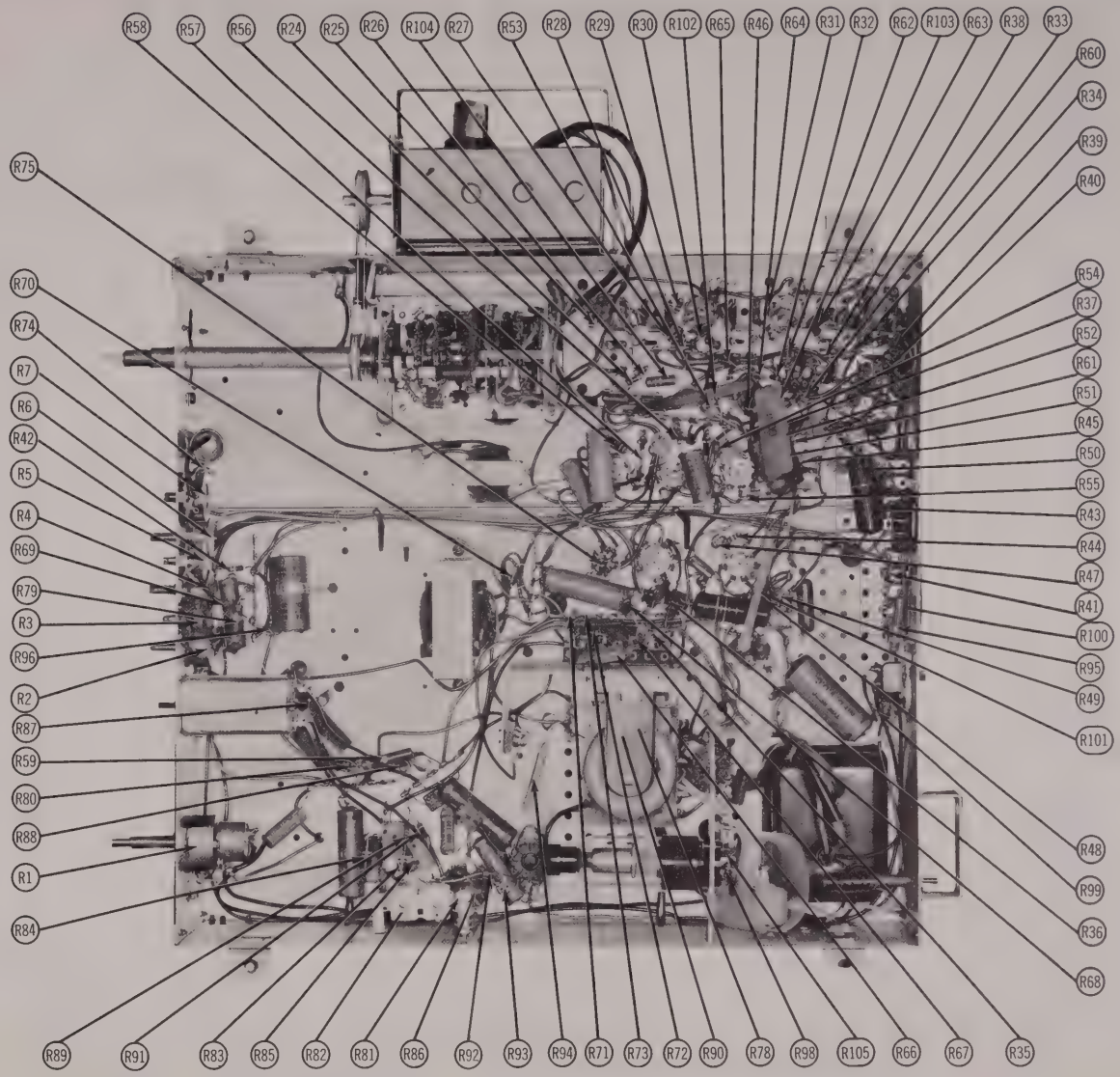
Remove 3 push on type control knobs from front panel.

Remove 2 wood screws (under side) holding chassis mounting board.

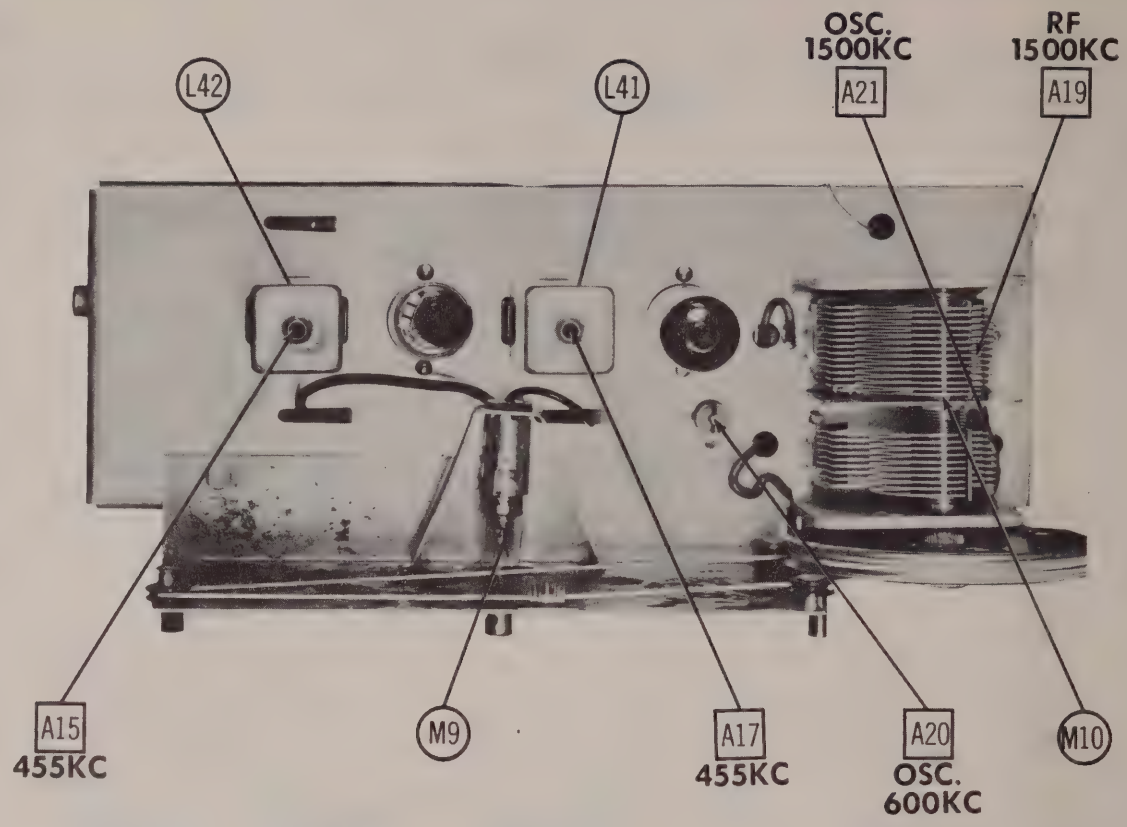
Disconnect phono audio plug.

Remove 3 chassis bolts. Remove chassis from mounting board.

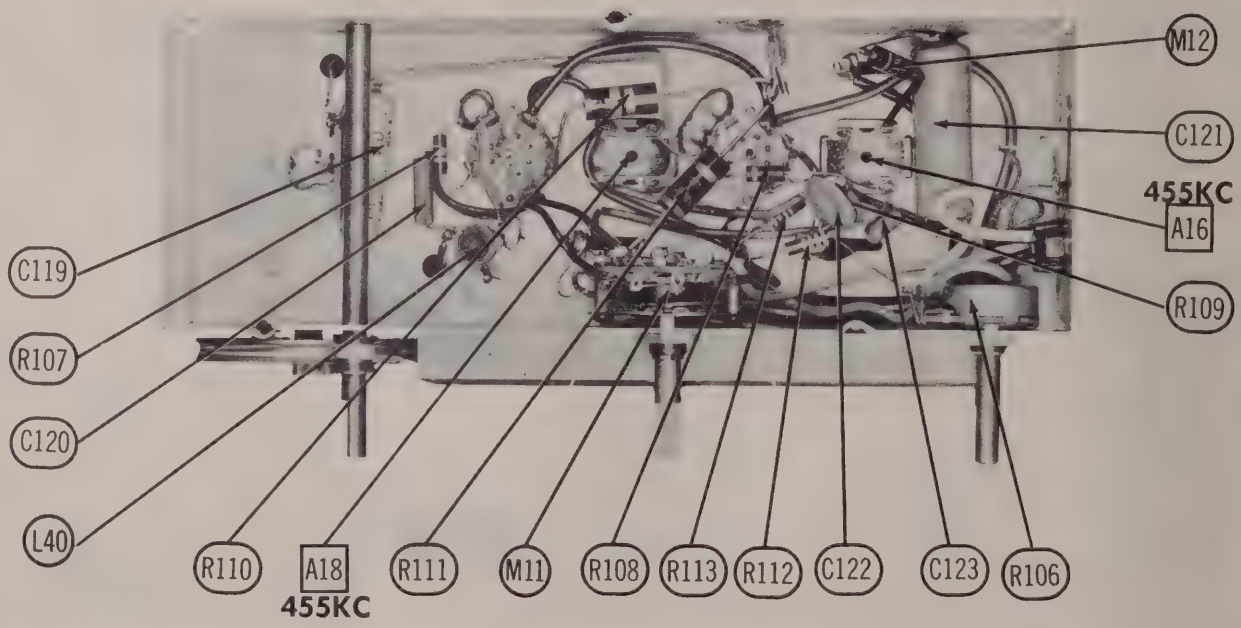
Remove 4 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW

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DENVER, COLORADO

SYLVANIA MODELS
433B, GR, H, LU, RE, YE (Ch. 1-604-1)

SYLVANIA MODELS
433B, GR, H, LU, RE, YE (Ch. 1-604-1)

TRADE NAME	Sylvania Models 433B, GR, H, LU, RE, YE (Ch. 1-604-1)
MANUFACTURER	Sylvania Electric Prod., Inc., Radio & Tel. Div., 254 Rano St., Buffalo 7, N.Y.
TYPE SET	Three Power Portable Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 If Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY RATING	110-120 Volts AC-DC (or) 7½ Volts "A" Supply & 75 Volts "B" Supply (90 Volts Optional) in pack form .14 Amp. @ 117 Volts AC (or) 60MA @ 7½ Volts DC & 10MA @ 75 Volts DC (or) 15MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain and output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver . Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"
4.		"	600KC	Tune to 600KC signal	"	A7	"
5.	Repeat Step 3.						

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1953 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

SYLVANIA MODEL 433B (Ch. 1-604-1)

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		SYLVANIA PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det-AVC-AF Amp.	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	150	161-4008							
B	▲50	50								
C	■50	150								
D	200	25								
C2	.047	200	160-02147	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C3	47		166-0047N	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C4	.22		160-02022							Note 1
C5	10000		168-0002D	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C6	1000		190-0011	BPD-001	D6-102	TM5D1	811-001	DC-521	5HK-D1	Note 2
C7	10000		168-0002D	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C8	220		163-0220	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C9	10000		190-0006	BPD-01	D6-103	TM5S1	811-01	DC-511	5HK-S1	Note 3
C10A	2000									
B	135									
C	10000		♦190-0010	♦PA-136	♦PC-165					
D	125									
E	5000									
C11	1000		161-1000P	SI1000	D6-102	TM5D1		UC-521	5HK-D1	
C12	.047	400	160-04147	489ZX-047		PTE4S47		PT4147	2TM-S47	
C13	.047	400	160-04147	489ZX-047		PTE4S47		PT4147	2TM-S47	

Note 1. Not used in all Models.
Note 2. C6 and R5 are combined in one unit.
Note 3. C9 and R10 are combined in one unit.
♦ Items C10A, C10B, C10C, C10D, C10E, R9A, R9B, R9C and R9D are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	37-78918-1	Q13-137X	AK-98	BTSK-72-S	UT-440	Volume tapped at 180K
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

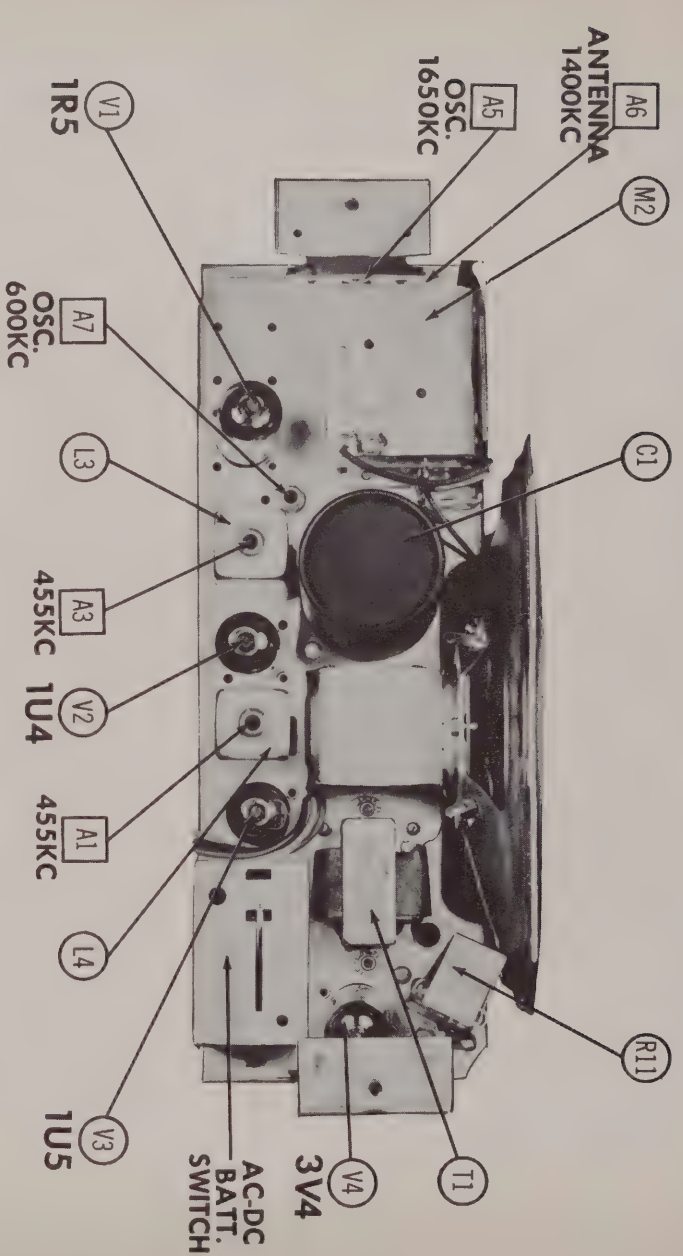
RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SYLVANIA PART No.	IRC PART No.	NOTES
R2	100KΩ	½	181-0104	BTS-100K	
R3	22KΩ	½	181-0223	BTS-22K	
R4	3.3Meg	½	181-0335	BTS-3.3Meg	
R5	3.3Meg	½	190-0006	BTS-3.3Meg	Note 1
R6	820Ω	½	181-0821	BTS-820	
R7	1500Ω	½	181-0152	BTS-1500	
R8	1500Ω	1	181-0152	BTA-1500	
R9A	10Meg	½		BTS-10Meg	Note 2
B	4.7Meg	½		BTS-4.7Meg	
C	1Meg	½	190-0010	BTS-1Meg	
D	3.3Meg	½		BTS-3.3Meg	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SYLVANIA PART No.	IRC PART No.	NOTES
R10	47KΩ	½	190-0006	BTS-47K	Note 3
R11A	1075Ω	10	185-0004		
B	1000Ω	10			
R12	100Ω	2	189-0033	BTB-100	
R13	1500Ω	½	182-0152	BTS-1500	
R14	2200Ω	1	182-0222	BTA-2200	

Note 1. R5, C6 are combined in one unit.
Note 2. R9A, R9B, R9C, R9D, C10A, C10B, C10C, C10D, are combined in one unit.
Note 3. R10, C9 are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	10KΩ	3.1Ω	550Ω	.45Ω	143-0027	A-3329	A-2932①		S-11X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	VIKING PART No.	QUAM PART No.	
SP1	4"x6"	PM	3.1Ω	539-042	46J6	46A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SYLVANIA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. coil	1Ω		582-0016				Includes mtg. board
L2	Osc. coil	2.3Ω	8Ω	113-0025	14-1074		71-Osc.	
L3	Input IF	32Ω	30Ω	121-0022	16-6758	BC-352	12-C1	
L4	Output IF	36Ω	36Ω	122-0024	16-6758 *	BC-353 *	12-C2 *	Pri. tapped ⓐ .4Ω

* Connect pin 3 of V2 directly to B+ line.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	SYLVANIA PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.068A	517-0005	NB5	5M4	1003A	6S75	75

BATTERIES

ITEM No.	VOLTAGE	SYLVANIA PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2A	7.5V "A" 75V "B"				755			T5Z50	
* M2B	7.5V "A" 90V "B"				756			T5Z60	* optional

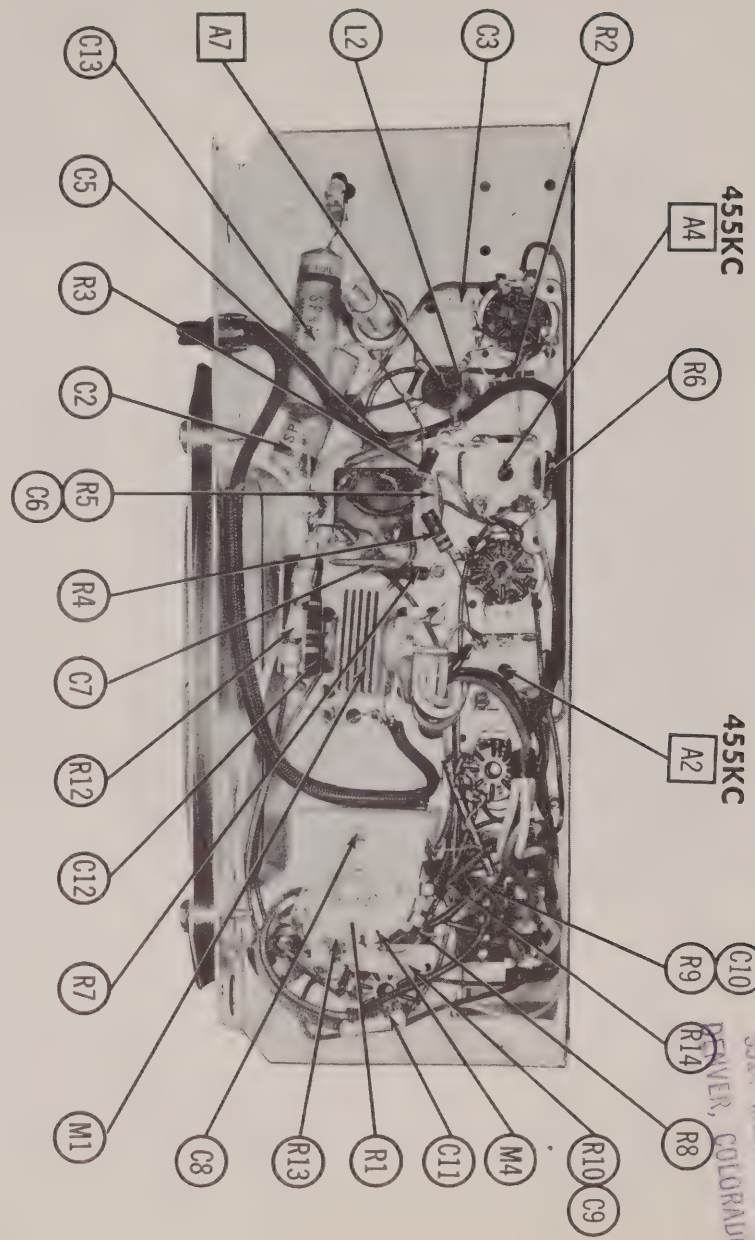
MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M3	Tuning cap	170-0011	(14-180MMF, 33-330MMF)
M4	Switch	572-0003	Power selector
	Cabinet	813-0033	plastic-black (model 433B)
	Cabinet	813-0035	plastic-green(model 433GR)
	Cabinet	813-0034	plastic-ivory (model 433H)
	Cabinet	813-0036	plastic-luggage (model 433LU)
	Cabinet	813-0038	plastic-red (model 433RE)
	Cabinet	813-0037	plastic-yellow (model 433YE)
	Cap, handle	818-0012	plastic-black (model 433B)
	Cap, handle	818-0013	plastic-green (model 433GR)
	Cap, handle	818-0014	plastic-ivory (model 433H)
	Cap, handle	818-0015	plastic-luggage (model 433LU)
	Cap, handle	818-0017	plastic-red (model 433RE)
	Cap, handle	818-0016	plastic-yellow (model 433YE)
	Bar-handle frame	803-0012	
	Base cover	808-0013	
	Knob	740-0043	Off-on volume
	Knob	740-0044	Tuning

DISASSEMBLY INSTRUCTIONS

1. Remove control knobs, station selector pointer and base. Remove station selector pointer by gripping it with either a bent wire hook or needle nose pliers inserted in the center slots.
2. Remove the four screws securing chassis and dial caps to the cabinet. Note assembly of the handle and dials and that chassis slides through grooves in cabinet. The chassis may now be removed.
3. To facilitate calibration, turn volume control until it clicks "Off" and station selector until tuning capacitor is fully meshed. Line up indicator marks accordingly, and press on knobs.

CHASSIS—BOTTOM VIEW



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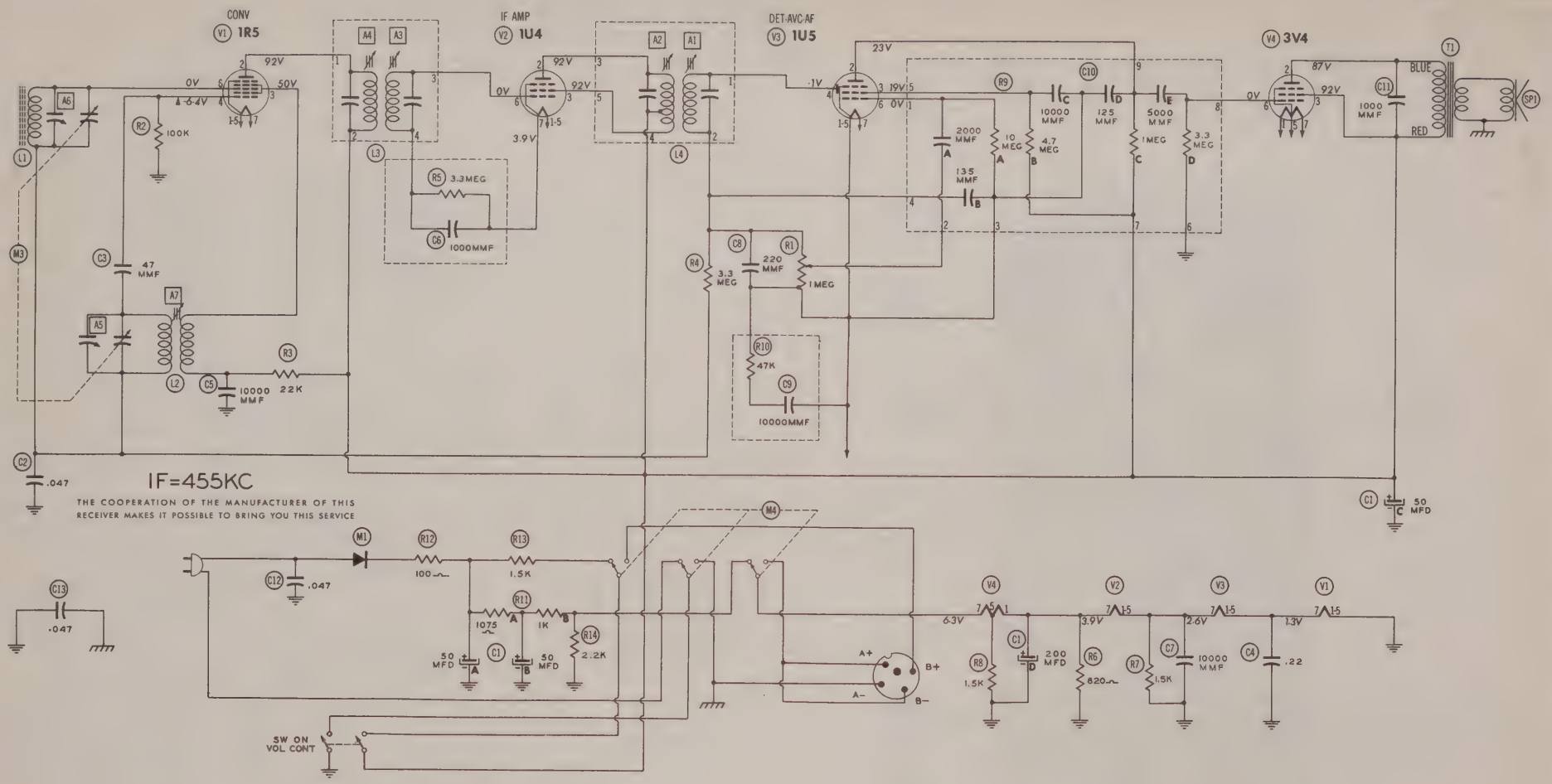
SYLVANIA
MODEL 433B (Ch. 1-604-1)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0Ω	†1.6KΩ	†23.6KΩ	100KΩ	•	4.3Meg	•
V 2	1U4	•	†1.6KΩ	†1.6KΩ	INF	•	3.3Meg	•
V 3	1U5	•	†1Meg	†4.7Meg	800KΩ	0Ω	10Meg	•
V 4	3V4	•	†2.1KΩ	†1.6KΩ	0Ω	•	3.3Meg	•

† MEASURED FROM OUTPUT OF M1.
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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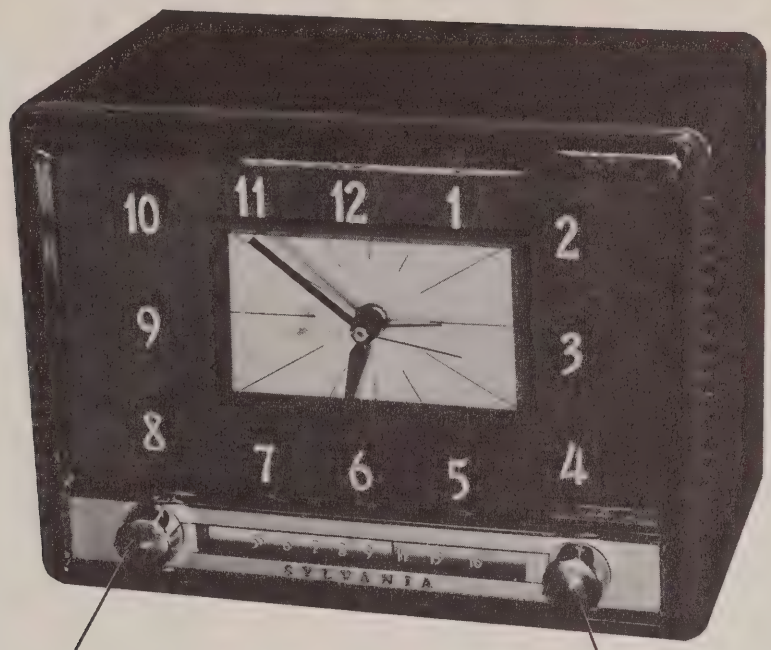
225-17

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
DENVER, COLORADO

SYLVANIA
MODELS 543, 593 (Ch. 1-602-2, -3)



ON-OFF VOLUME CONTROL

TUNING CONTROL

SYLVANIA
MODELS 543, 593 (Ch. 1-602-2, -3)

TRADE NAME	Sylvania Model 543 (Ch. 1-602-2), 593 (Ch. 1-602-3)
MANUFACTURER	Sylvania Elect. Prods., Inc., Radio & TV Div., 254 Rano St., Buffalo, N.Y.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	105-128 Volts AC-60 Cycles RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Remove chassis from cabinet and connect jumper between pins 4 and 5 on clock socket to complete AC circuit.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 600KC signal	"	A7	Adjust for maximum deflection while rocking tuning gang thru 600KC signal. Repeat step 3.

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PARTS LIST AND DESCRIPTIONS

SYLVANIA
MODEL 543 (Ch. 1-602-2)

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		SYLVANIA PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150	161-2002	PRS150/40-40		BRD4415A		TCD48	TVA-2445	Red Blue
B	40	150								
C2	.047	200	160-04147	P288-047	DF-503	PJ2S5		PT415	2TM-S47	
C3	100		166-0100P	SII00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C4	1000		166-1000D	BPD-001	DD-102	TM5D1	GP2L-102	DC-521	5GA-D1	
C5A	220		*190-0009	*PA-113-1	*PC-150		*1408-01		*103C4	
B	2000									
C										
D	5000									
E										
C6	.022	400	162-04122	P488-022	DD-203	PTE4S22		PT4122	4TM-S22	
C7	.047	400	160-04147	489ZX-05		PJ4S5		PT415	4TM-S47	
C8	.047	400	160-04147	489ZX-05		PJ4S5		PT415	4TM-S47	

* C5A, C5B, C5C, C5D, C5E and R7A, R7B, R7C are combined in one unit.
When replacing items separately C5C and C5E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	153-0022	Q11-133	AG-58-S	AB-59	U-50	Panelscent dimmer -Note
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	500KΩ	½	152-0019	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R2A

Note: Used only in chassis No. 1-602-2.

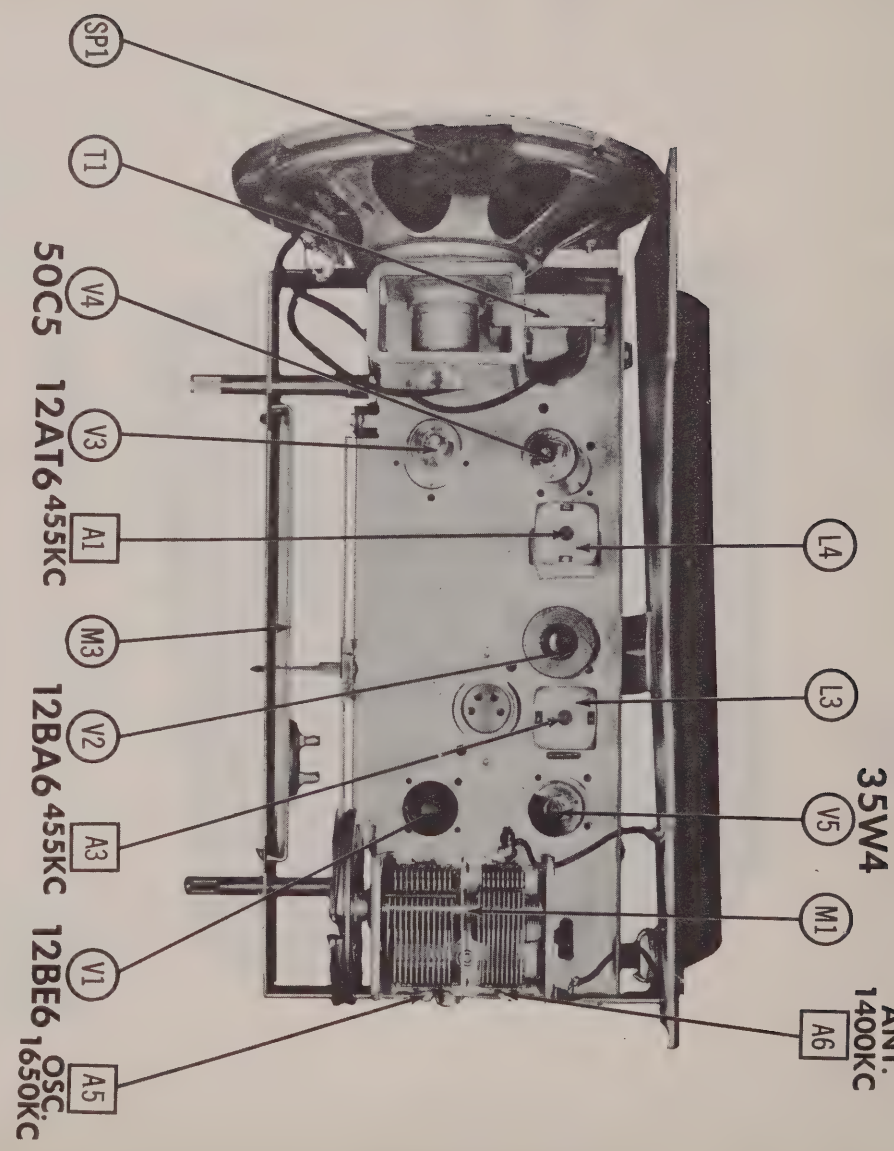
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SYLVANIA PART No.	IRC PART No.	
R3	22KΩ	½	181-0223	BTS-22K	
R4	22Ω	½	181-0220		
R5	470KΩ	½	181-0474	BTS-470K	
R6	2.2Meg	½	181-0225	BTS-2.2Meg	
R7A	6.8Meg	½	*190-0009	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SYLVANIA PART No.	IRC PART No.	
R8	150Ω	½	181-0151	BTS-150	
R9	1200Ω	1	182-0122	BTA-1200	
R10	12KΩ	½	181-0123	BTS-12K	Note
R11	12KΩ	½	181-0123	BTS-12K	Note
R12	12KΩ	½	181-0123	BTS-12K	Note
R13	12KΩ	½	181-0123	BTS-12K	Note
R14	25Ω	1	189-0013		

Note: Used only in chassis No. 1-602-2
* Items R7A, R7B, R7C, C5A, C5B, C5C, C5D, C5E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.4KΩ	3.4Ω	210Ω Tap ⓐ 10Ω	.5Ω	143-0028	A-3330①	A3031①	R0-3 ①		① Bend mounting tabs down, file out slots, mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.4Ω	539-0501	ST-105 Mod P5-X	5A1	

COILS (RF-IF)

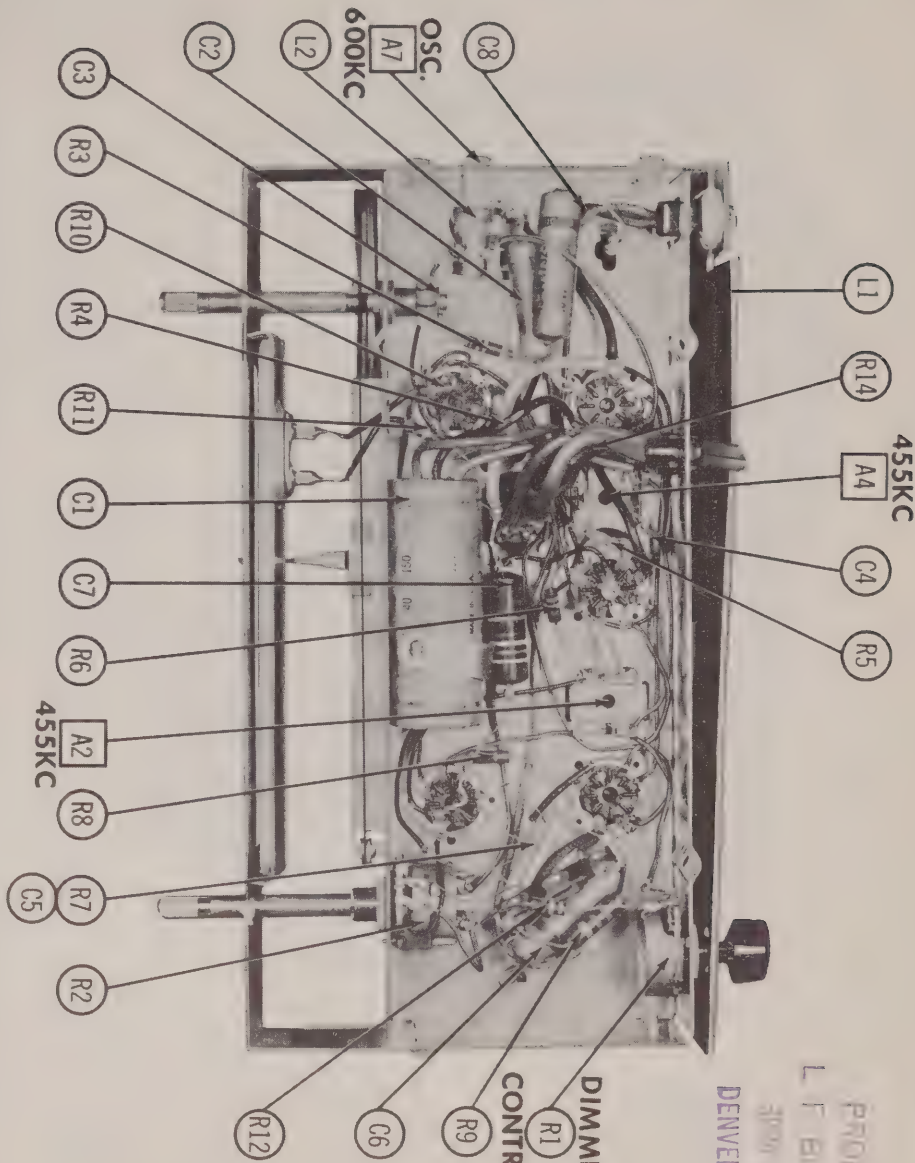
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SYLVANIA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	1Ω		582-0017				Includes cabinet back
L2	Osc. Coil	1Ω	7.5Ω	113-0023			71-Osc.	
L3	Input IF	12Ω	12Ω	121-0021	16-6758	BC-352	12-C1	
L4	Output IF	19Ω	20Ω	122-0023	16-6758 *	BC-353 *	12-C2 *	Pri. tapped ⓐ .4Ω

* Connect Pin 6 of V2 directly to B+ line.

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M1	Tuning cap	170-0009	2 gang (30-330MMF, 25-170MMF)
M2	Clock motor	924-003	sessions No. A742
M3	"Panelescent" Lamp	477-0004	radio dial chassis 1-602-2 only (543 models)
M4	"Panelescent"Lamp	477-0005	Clock dial chassis 1-602-2 only (543 models)
	Cabinet	813-0026	plastic-black models 543B, 593B
	Cabinet	813-0029	plastic chartreuse models 543CH, 593CH
	Cabinet	813-0030	plastic-green models 543GR, 593GR
	Cabinet	813-0027	plastic-ivory models 543H, 593H
	Cabinet	813-0028	plastic-mahogany models 543M, 593M
	Cabinet	813-0024	plastic-red models 543F, 593R
	Cabinet	813-0031	plastic-yellow models 543YE, 593YE
	Dial glass	721-0009	clock & station
	Knob	740-0038	"panelescent" dimmer (543 models only)
	Knob	740-0033	tuning, off-on volume-two used

CHASSIS—BOTTOM VIEW



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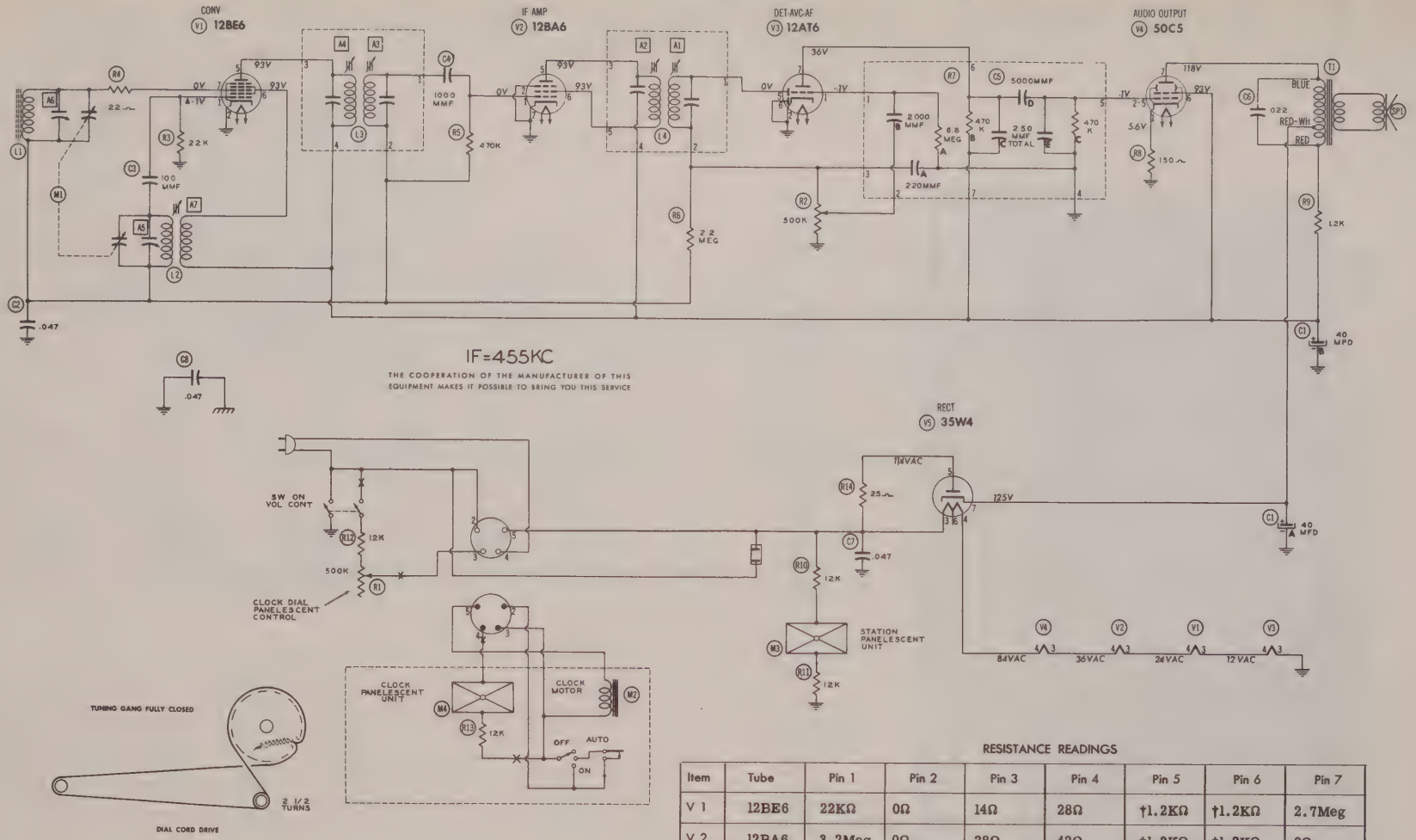
SYLVANIA
MODEL 543 (Ch. 1-602-2)

SET 225 FOLDER 18



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	0Ω	14Ω	28Ω	†1.2KΩ	†1.2KΩ	2.7Meg
V 2	12BA6	3.2Meg	0Ω	28Ω	42Ω	†1.2KΩ	†1.2KΩ	0Ω
V 3	12AT6	6.8Meg	0Ω	0Ω	14Ω	500KΩ	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	42Ω	95Ω	470KΩ	†1.2KΩ	†200Ω
V 5	35W4	0Ω	INF	135Ω	95Ω	160Ω	0Ω	100KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V5

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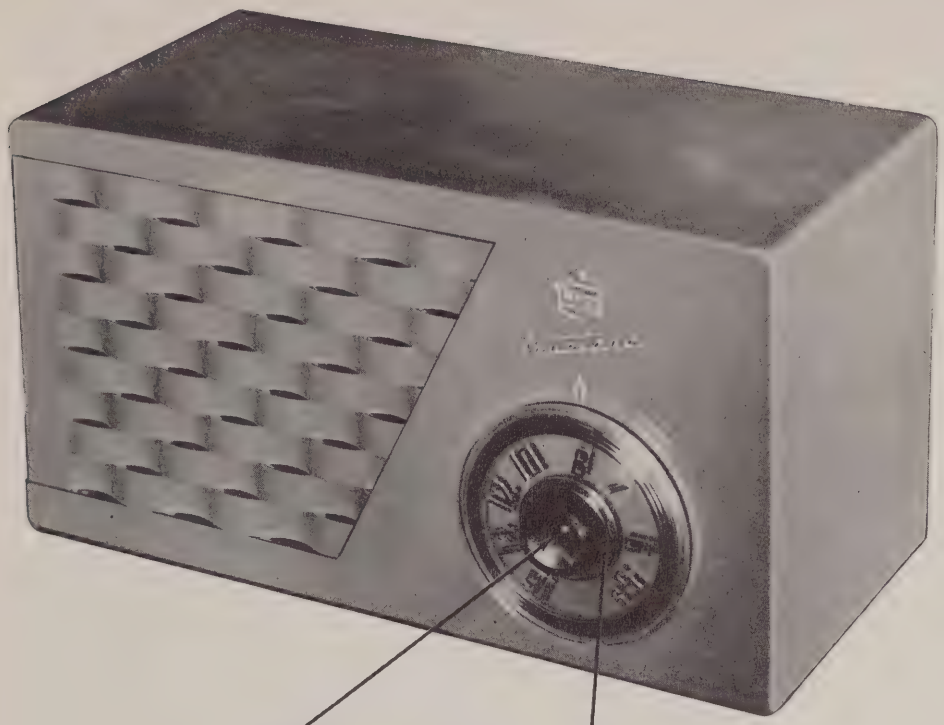
225-18

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRUETONE MODELS
D2410A, D2411A, D2412A, D2413A



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TRUETONE MODELS
D2410A, D2411A, D2412A, D2413A

TRADE NAME	Truetone Models D2410A , D2411A, D2412A, D2413A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC-DC Operated "AM" Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 (or) 12AT6 Det.-AVC-AF Amp. 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .25 Amp. @ 115 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator plates of tuning gang. Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop "	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. If range of A6 is insufficient adjust trimmer at opposite side of stator plates.
4.		"	600KC	Tune to 600KC signal	"		Bend slotted rotor plates on antenna section of tuning gang for maximum deflection.
5.	Repeat steps 2 and 3. Check calibration at 1000 and 600KC.						

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PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D2410A

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		TRUETONE PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3A	Det-AVC-AF-Amp.	12AV6	12AV6	7BT	
B	Det-AVC-AF-Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	8C-22087	AFH2-15		BO15		FP213	TVL-2432	
B	30	150								
C2	.047	400	8D-21831	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C3	200		8G-22384	SI200NP0	TCZ-200					
C4	47		8G-19863	SI47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C5A	220									
B	5000									
C			*201-19303	*PA-113-2	*PC-151		*1408-02		*103C5	
D	5000									
E										
C6	.022	400	8J-19757	P488-022	DD-203	PTE4S22		PT4122	4TM-S22	
C7	.022	600	8J-20604	689ZX-022		PJ6S2		PT6122	6TM-S22	
C8	10									Note 1.

* Items C5A, C5B, C5C, C5D, C5E, R7A, R7B and R7C are combined in one unit.
When replacing items separately items C5C and C5E total 250MMF.
Note 1. Not used in all Models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	10A-22063	Q-13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWA	Not Req.	US-26	Attach to R1A

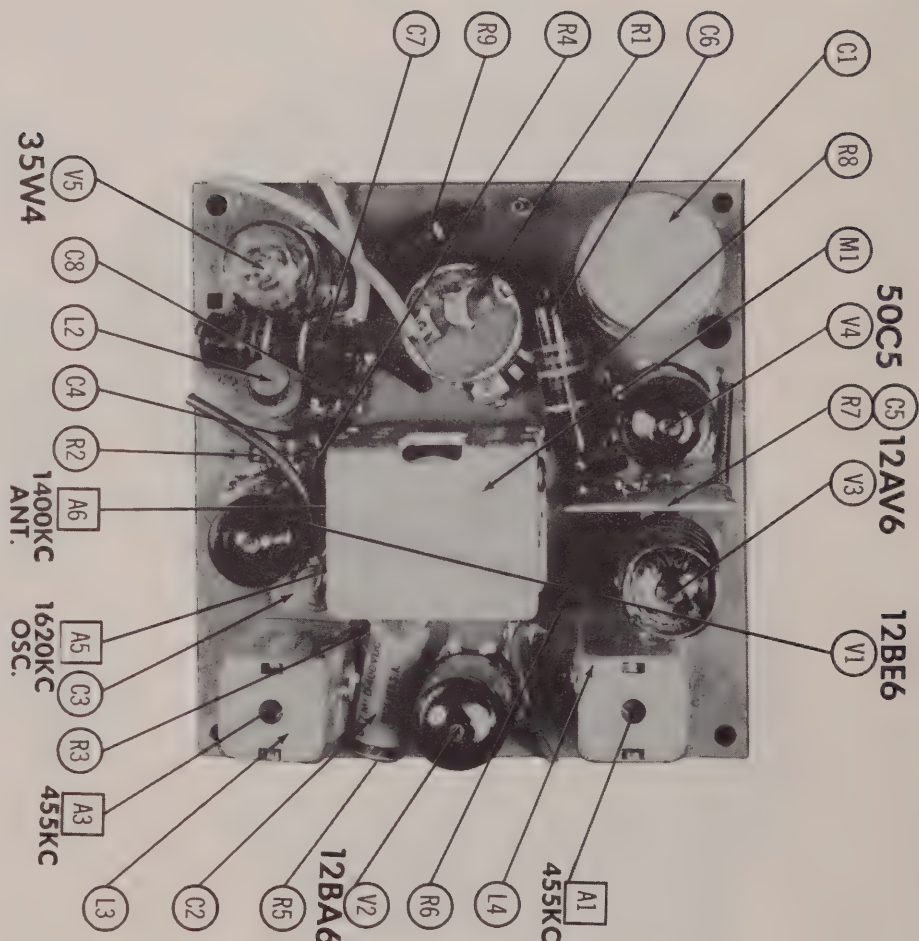
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R2	47KΩ	½	9B1-82	BTS-47K	
R3	1.5Meg	½	9B1-100	BTS-1.5Meg	
R4	100Ω	½	9B1-50	BTS-100	
R5	150Ω	½	9B1-52	BTS-150	
R6	2.2Meg	½	9B1-33	BTS-2.2Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R7A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	201-19303*	BTS-470K	
C	470KΩ	½		BTS-470K	
R8	150Ω	½	9B1-52	BTS-150	
R9	1000Ω	1	9B2-62	BTA-1000	
R10	27Ω	½	9B1-43	BTS-27	Note 1

Note 1. Not used in all models
* Items R7A, R7B, R7C, C5A, C5B, C5C, C5D, C5E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.4KΩ	3.2Ω	152Ω	.45Ω	Part of Speaker	A-3332	A-3025	RO-302①	S-1X ①	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.2Ω	18A2206	ST-113 Mod P4-X	4A07	

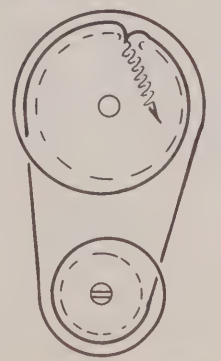
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	0Ω	1.9Ω	13E-22069				Includes cabinet back & power cord.
L2	Osc. Coil	3Ω	6Ω	201-22104	14-1074		70-Osc. *	
L3	Input IF	15Ω	15Ω	13B-22068	16-6758	BC-352	12-C1	
L4	Output IF	15Ω	15Ω	13B-22068	16-6758	BC-353	12-C2	

* Disregard tap on secondary winding.

MISCELLANEOUS

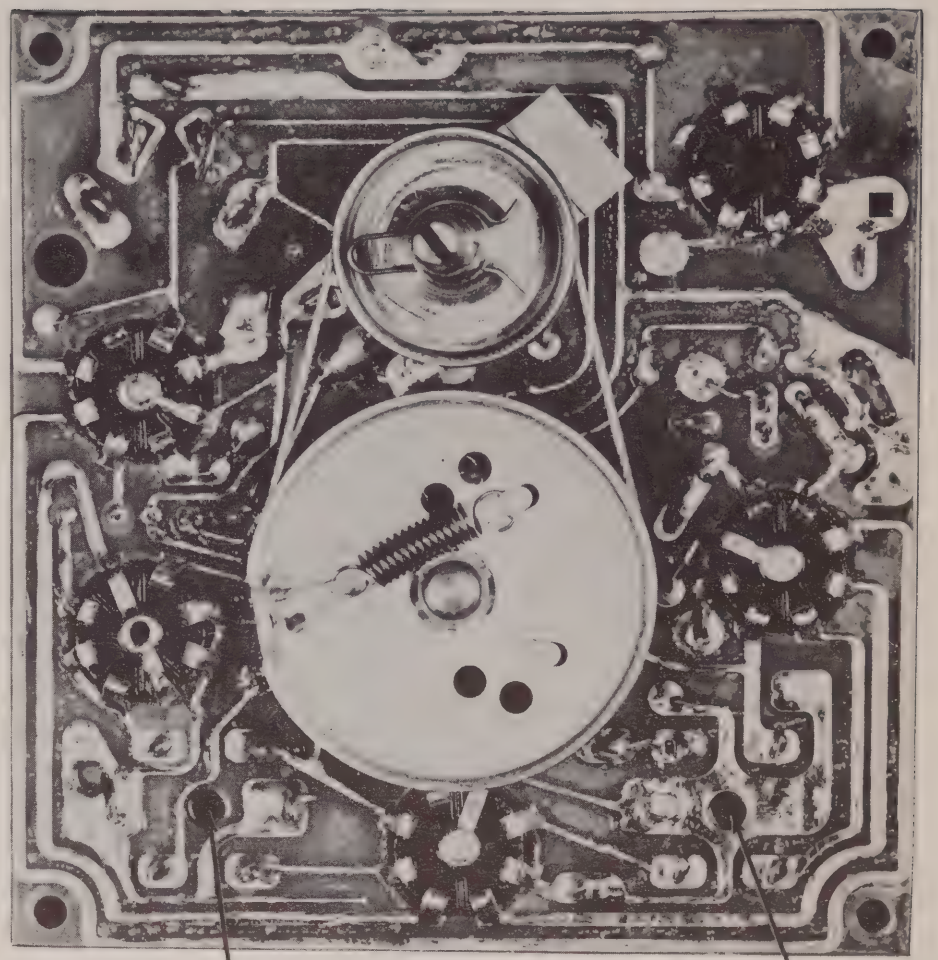
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M1	Tuning cap	8A-22067	2gang (25-360MMF)(15-135MMF)
	Cabinet	A123	beige
	Cabinet	A120	red
	Cabinet	A122	green
	Cabinet	A121	ivory
	Knob	B-5B-22094	off-on volume
	Knob	C-5B-22086	tuning



BOTH DRUMS FULLY COUNTERCLOCKWISE

DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



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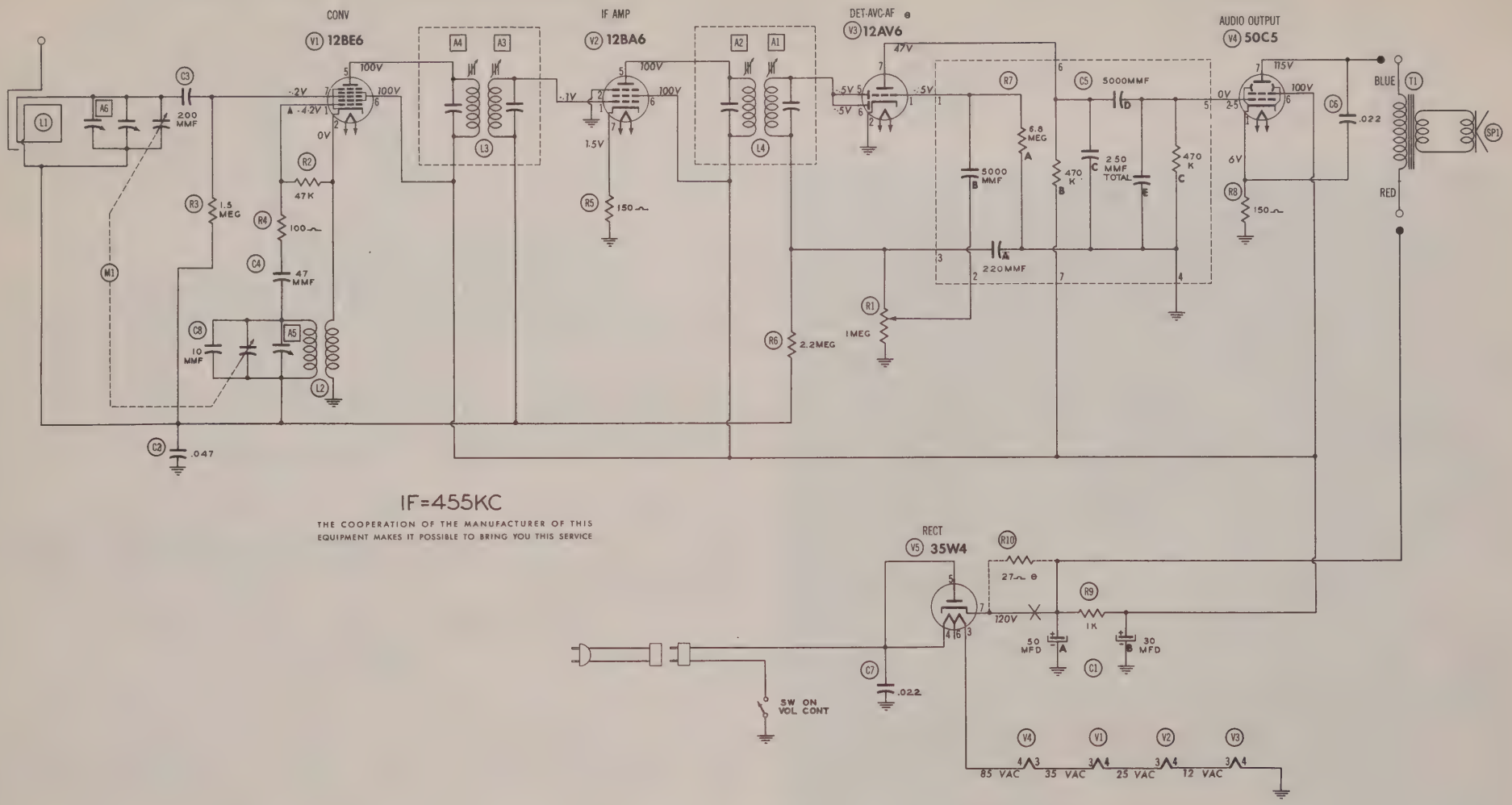
L. F. [illegible]
DENVER, COLORADO

TRUETONE MODEL D2410A

TRUETONE MODEL D2410A



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	47KΩ	.3Ω	65Ω	40Ω	† 1KΩ	†1KΩ	4. 7Meg
V 2	12BA6	3. 2Meg	0Ω	40Ω	17Ω	†1KΩ	† 1KΩ	150Ω
V 3	12AV6	6. 8Meg	0Ω	17Ω	0Ω	1Meg	1Meg	† 470KΩ
V 4	50C5	150Ω	470KΩ	65Ω	170Ω	470KΩ	† 1KΩ	† 150Ω
V 5	35W4	INF	INF	170Ω	250Ω	320Ω	320Ω	50KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED TO PIN 7 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TRUETONE
MODEL D3300

TRADE NAME	Truetone Model D3300
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Battery Operated Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	1½ Volts "A" Supply & 67½ Volts "B" supply
RATINGS	250MA @ 1½ Volts DC & 10MA @ 67½ Volts DC
TUNING RANGE—BROADCAST	532-1680KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed set pointer to the left edge of "5" on the dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	1680KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune to 1500KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D3300

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		TRUETONE PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det. -AVC-AF Amp.	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	4	100	31-19	PRS150/4		BR415		TC40	TVA-1402	
C2	.05	200	32-64	P288-05	DF-503	PJ2S5			2TM-S5	
C3	10000		35-29	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C4	.003	200	32-36	P285-003	D6-302	PJ6D3	GP2-333-302	PT623	6TM-D3	
C5	3.3		35-32	SI3.3NP0	TCN-3.3		NP0K-3R3	ZT-5533		
C6A	220			SI220			GP2K-221	UC-5322	5GA-T22	
B	2000			BPD-002			811-002	DC-522	5HK-S2	
C	10000		36-6	BPD-01	PC-160		811-01	DC-511	5HK-S1	Note 1
D	100			SI100			GP1K-101	UC-531	5GA-T1	
E	5000			BPD-005			811-005	DC-525	5HK-D5	
C7	5000		35-28	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	

Note 1. Items C6A, C6B, C6C, C6D, C6E, R6A, R6B, R6C and R6D are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	2Meg	½	50-45	Q13-139	AG-66-Z	B-76-S	U-55	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

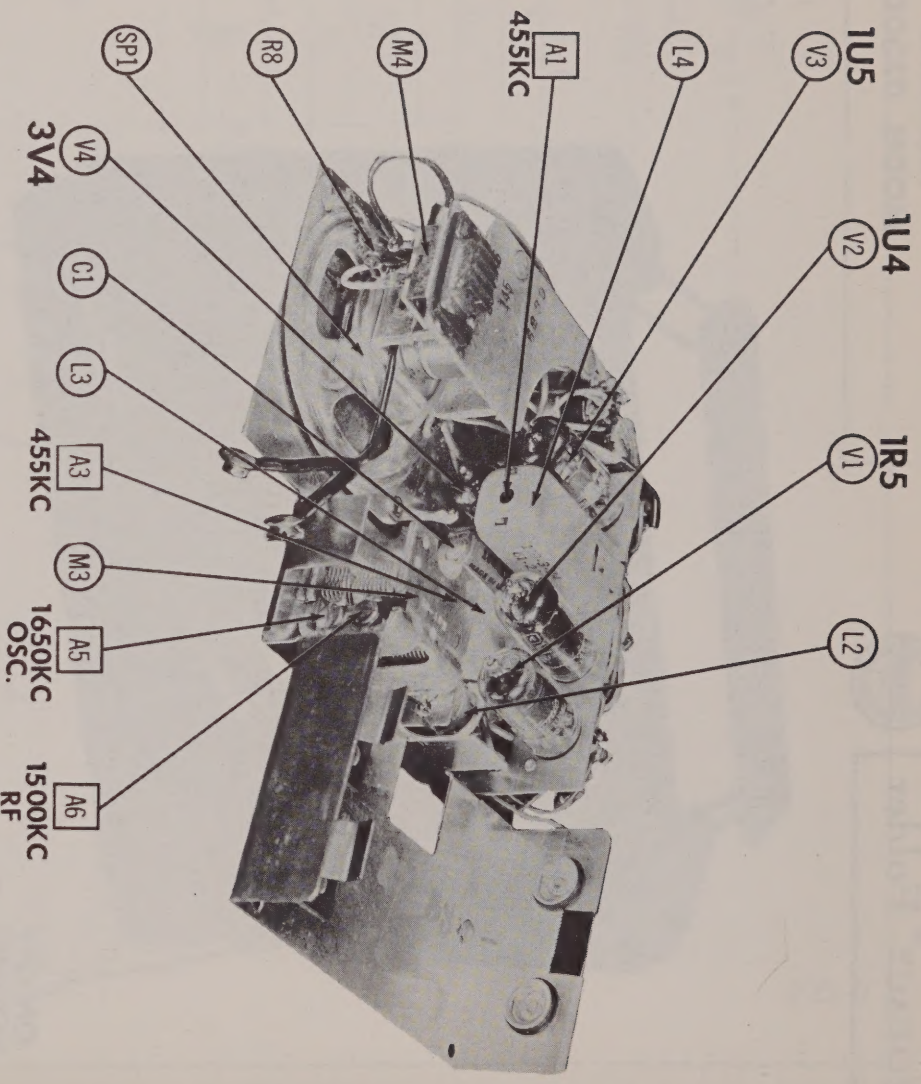
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R2	100KΩ	½	20-104-11	BTS-100K	
R3	15KΩ	½	20-153-11	BTS-15K	
R4	3.3Meg	½	20-335-11	BTS-3.3Meg	
R5	3.3Meg	½	20-335-11	BTS-3.3Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R6A	10Meg	½	♦ 36-6	BTS-10Meg	
B	4.7Meg	½		BTS-4.7Meg	
C	1Meg	½		BTS-1Meg	
D	3.3Meg	½		BTS-3.3Meg	
R7	820Ω	½	20-821-11	BTS-820	
R8	820Ω	½	20-821-11	BTS-820	

♦ Items R6A, R6B, R6D, C6A, C6B, C6C, C6D, C6E, are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	10KΩ	2.8Ω	550Ω	.38Ω.	90-4	A-3329			S-11X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	3"	PM	2.8Ω	55-3 80-41X5 ①			① Speaker assy. with output trans.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.5Ω		62-31				
L2	Osc. Coil	2.5Ω	8.5Ω	60-37	14-1073		69-Osc.	
L3	Input IF	26Ω	26Ω	61-23	16-6758	BC-352	12-C1	
L4	Output IF	26Ω	26Ω	61-23	16-6758	BC-353	12-C2	

BATTERIES

ITEM No.	VOLTAGE	TRUETONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1 M2	1.5V 67.5V	Wizard 3B6112 Wizard 3B6256	964	477		21R	P45		2 used in parallel

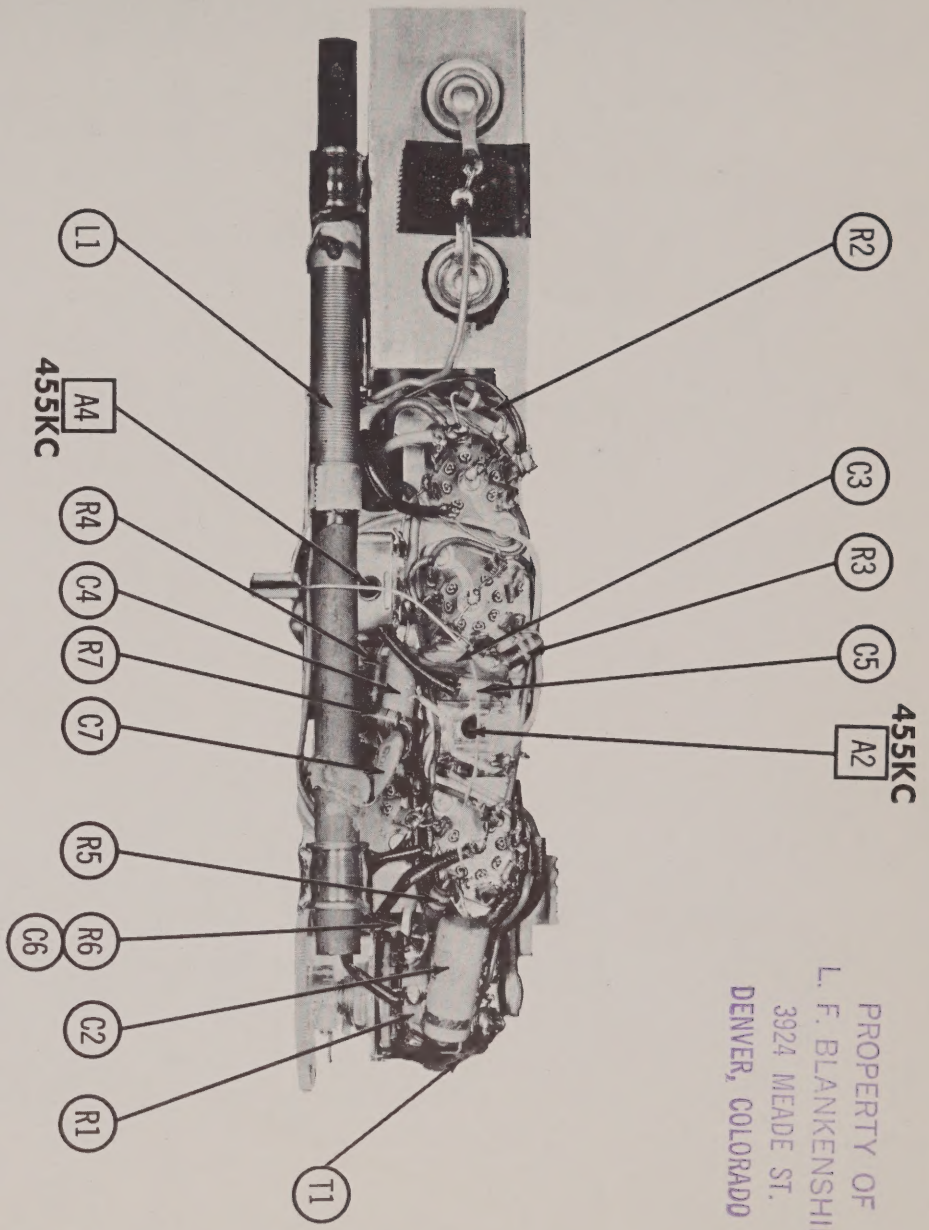
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Tuning cap	30-49	(12-240MMF, 12-110MMF)
M4	Switch	65-16	Battery saver (D. P. S. T.)
	Cabinet	120-102	Polystyrene, in colors
	Knob	122-73	Tuning
	Knob	122-74	Volume, off-on

SET 225 FOLDER 20

TRUETONE MODEL D3300

CHASSIS—BOTTOM VIEW



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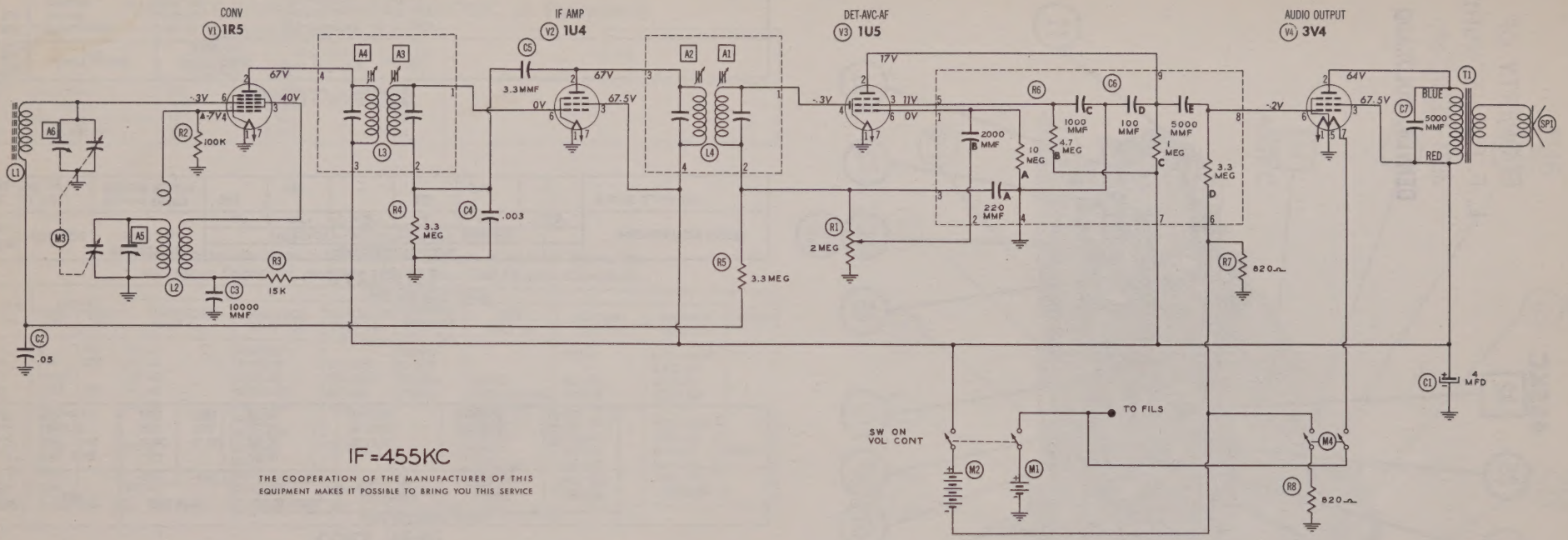
DENVER, COLORADO

TRUETONE MODEL D3300



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0Ω	†25Ω	†15KΩ	100KΩ	0Ω	5.3Meg	*
V 2	1U4	0Ω	†25Ω	†0Ω	†15KΩ	0Ω	3.3Meg	*
V 3	1U5	0Ω	†1Meg	†4.7Meg	2Meg	0Ω	10Meg	*
V 4	3V4	*	†550Ω	†0Ω	820Ω	0Ω	3.3Meg	*

† MEASURED FROM PIN 3 OF V4 (B+)

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

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225-20

1. DC Voltage measurements are at 20,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15 % in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.